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Rock Fish

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
EUGENE DISTRICT OFFICE

ENVIRONMENTAL ASSESSMENT NO. OR090-03-14

Rock Fish Timber Sale

1.0 INTRODUCTION

1.1 BACKGROUND AND HISTORY

This action proposes timber harvest and other forest management activities within a 640-acre project area located in Section 23, Township 16 South, Range 7 West, Willamette Meridian, Lane County, Oregon in the Siuslaw Resource Area of the Eugene District of the Bureau of Land Management (BLM). The project area consists of 42-45 year old timber. Five action alternatives are analyzed that consider commercial thinning on 380-550 acres, and include the use of the Nelson Mountain Quarry, located within the project area. The No Action alternative is also analyzed.

1.2 PURPOSE OF AND NEED FOR THE ACTION

The project area is within the Matrix Land Use Allocation (LUA) and includes management objectives for both the General Forest Management Area (GFMA) and Riparian Reserves.

The purpose of the action is to provide a sustainable supply of timber while maintaining forest health and productivity, and to contribute to attainment of Aquatic Conservation Strategy (ACS) Objectives. The need is established in the Eugene District Record of Decision and Resource Management Plan (RMP) (June 1995), which directs that timber be harvested from the Matrix LUA, and that actions be taken to attain ACS objectives.

Both the Lake Creek Watershed Analysis (June, 1995) and the Long Tom Watershed Analysis (October, 2000) support the need for density reduction in the GFMA and Riparian Reserve to meet the above resource objectives.

1.3 MANAGEMENT OBJECTIVES AND GOALS FOR LAND WITHIN THE MATRIX

The following are the primary goals and objectives of the Matrix land use allocation (*Eugene District Rod/RMP, June 1995):*

- Produce a sustainable supply of timber and other forest commodities to provide jobs and to contribute to community stability.

• Provide connectivity (along with other allocations such as Riparian Reserves) between Late-Successional Reserves.

• Provide habitat for a variety of organisms associated with both late-successional and younger forests.

• Provide important ecological functions, such as dispersal of organisms, the carryover of some species from one stand to the next, and maintenance of ecologically valuable structural components, such as down logs, snags, and large trees.

• Provide early-successional habitat.

1.4 MANAGEMENT OBJECTIVES AND GOALS FOR THE RIPARIAN RESERVE

"Under the Aquatic Conservation Strategy, Riparian Reserves are used to maintain and restore riparian structures and functions of streams, confer benefits to riparian-dependent and associated species other than fish, enhance habitat conservation for organisms that are dependent on the transition zone between up slope and riparian areas, improve travel and dispersal corridors for many terrestrial animals and plants, and provide for greater connectivity of the watershed". *(ROD B-13)*

1.5 CONFORMANCE WITH LAND USE PLAN

All alternatives are in conformance with the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl* (NSO ROD) (April 1994), and the RMP, as amended by the *Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines*, USDA Forest Service and USDI Bureau of Land Management, January 2001.

Additional site-specific information is available in the Rock Fish Timber Sale project analysis file. This file and the above referenced documents are available for review at the Eugene District Office.

2.0 ISSUES SELECTED FOR ANALYSIS

The issues for analysis were developed based on interdisciplinary team discussion. The issues are summarized below and serve to focus the analysis and comparison of alternatives.

Issue 1. What are the effects of timber harvest and associated activities on northern spotted owl dispersal habitat?

Timber harvest could affect the quantity and quality of spotted owl dispersal habitat.

Measurements: *Post-harvest canopy closure and quantity of dispersal habitat in acres.*

Issue 2. What are the effects of timber harvest and associated activities on soil compaction?

Timber harvest, road renovation, and road construction on certain soil types can lead to compaction that cannot be completely ameliorated.
Measurements: *Amount of compaction after amelioration in acres.*

Issue 3. What are the effects of timber harvest and other activities on attainment of ACS objectives and coho salmon habitat?

There are several streams and Riparian Reserves within the proposed project area. Coho habitat is downstream from part of the project area. Timber harvests, road renovation and road construction could affect attainment of ACS objectives, and therefore, coho habitat.

Measurements: *ACS objective effect determination (maintain, restore, or retard) for each alternative.*

Issue 4. What are the effects of road renovation and new road construction on the proliferation of Off Highway Vehicle (OHV) use?

Heavy OHV use is occurring in a section of public land adjacent to the proposed project area. There are concerns that removing trees and exposing existing dirt roads would entice OHV use into the proposed project area.

Measurements: *Acres available for harvesting that contain flat to moderate topography; change in the number of existing abandoned roads.*

Issue 5. What are the effects of timber harvest and associated activities on the spread of scotch broom and knapweed?

Scotch broom and knapweed are known to exist within the watersheds. These plants are able to quickly colonize areas with bare soil. Harvest activities and road construction increase the amount of bare soil and provide areas in which these weeds can thrive.

Measurements: *Amount of soil and vegetation disturbance, in acres.*

2.1 ISSUES CONSIDERED BUT NOT ANALYZED

Quarry activities were examined to determine what, if any, environmental effects might result. An issue that considered the disturbance effects of blasting and rock crushing to potential nesting marbled murrelets was considered but not analyzed because quarry activities would take place outside of the murrelet nesting season. As a result, no disturbance to possible nesting murrelets would occur. No other potential issues related to quarry operations were identified.

3.0 ALTERNATIVES

Alternatives 1, 2, 3, 4 and 5 consider timber harvest and other forest management activities on a project area of approximately 550 acres (see maps) and are summarized in Table 1 below. Alternative 6 (the No Action Alternative) is not shown. More detailed information can be found in Appendix A, where design features are described in detail.

3.1 ALTERNATIVE 1 - COMMERCIAL THINNING / DENSITY MANAGEMENT WITH CABLE YARDING (NO NEW ROADS OR ROAD RENOVATION)

Alternative 1 is a thinning alternative using only existing rocked roads. Approximately 380 acres would be treated (325 acres of GFMA and 55 acres of Riparian Reserve). Approximately 4.9 MMBF of timber would be offered for sale.

Silviculture

Trees in the GFMA LUA would be commercially thinned to capture mortality, reduce tree stocking density, and redistribute growth and yield to the remaining stand. The Riparian Reserve would receive a density management treatment to speed development of a diverse large conifer canopy to meet the ACS objectives. The GFMA and Riparian Reserve would be thinned from below to a residual density of 60-90 trees per acre (TPA) and a basal area of approximately 120-135 sq. ft. per acre with generally wider spacing of the residual trees in the Riparian Reserve.

All Pacific yew, western red cedar, and hardwoods would be retained to the extent possible to maintain diversity. Trees larger than 28 inches diameter at breast height (DBH) would be retained, where operationally feasible. Snags and down wood of decay classes 3, 4, and 5 would be retained. Conifers less than 6 inches DBH would be protected where possible within Riparian Reserves to retain structural diversity of the stand.

Yarding Methods

Cable yarding with at least one end log suspension would be required both in the GFMA and Riparian Reserve, and would follow the cable yarding design features listed in Appendix A. Approximately 380 acres would be cable yarded with this alternative.

Directional felling and yarding away from streams would be required where feasible to provide for streambank stability and water quality protection. Skyline cable corridors would be needed across streams and through buffers to gain suspension of logs during yarding. No yarding of logs across streams would occur within these skyline cable corridors except for Stream 4. Full suspension of logs would be required when yarding logs across this stream.

Fuel Reduction Treatments

Fuel treatments would be used to reduce the resulting moderate levels of slash within the project area. The fuel bed is expected to be compacted, unequally distributed, with openings and heavier concentrations in the direction of the yarding. Numerous small landing piles of unmerchantable material would be expected along existing roads from felling and yarding operations.

Landing piles would be covered and burned as needed to reduce the fire hazard. Treatment of slash (tracked excavator piling with burning), along Road Nos. 16-7-12 and 16-7-23.1, Segment A, would provide fuel breaks to create reasonably safe access into a fire and a lower fire intensity zone, where a wildfire may be safely attacked. Piling would occur on approximately 12 acres.

Reserves

Approximately 55 acres of the Riparian Reserve would be thinned under this alternative to speed the development of a diverse, large conifer canopy. No-treatment stream buffers of varying widths (50 feet to 200 feet on nonfish-bearing and 200 feet on fish-bearing reaches) would be prescribed to protect streams, stream banks, and riparian/aquatic resources. Minimum stream buffer requirements would be the same for all action alternatives (see Appendix A for detailed minimum buffer widths by stream reach).

Roads

No new roads would be constructed, and no road renovation would occur with this alternative. No road decommissioning would occur with this alternative, since only the existing, rocked roads would be used. Road No. 16-7-23.1, Segment B would be improved by replacing existing culverts, installing new cross-drain culverts, and re-rocking the roadway with a 4"-6" lift of crushed rock. The primary haul route of logs to the mill would be Fisk Road (Road No.16-6-31). Using Fisk Road as the haul route would avoid hauling within close proximity to fisheries resources along an alternate, existing access route to the sale area along Fish Creek.

All existing gravel roads within the project area and the Fisk Road haul route would be re- rocked with a 6" lift of crushed rock. The rock would come from the existing Nelson Mountain Quarry, located within the project area. Approximately 9,000 cubic yards of crushed rock would be taken from the quarry. The existing floor of the quarry would be lowered to obtain suitable rock. The physical footprint of the quarry would not be enlarged. Quarry activities would occur outside of the marbled murrelet breeding season in order to avoid disturbance to any murrelets nesting in nearby unsurveyed habitat (murrelet breeding season runs from April 1 to September 15).

3.2 ALTERNATIVE 2 - COMMERCIAL THINNING / DENSITY MANAGEMENT WITH CABLE AND GROUND-BASED YARDING (ROAD RENOVATION WITH NO NEW ROAD CONSTRUCTION)

Alternative 2 is a thinning alternative using both the existing rocked roads and existing secondary roads. The secondary roads would be renovated to access a harvest area larger than Alternative 1. Approximately 480 acres would be treated (420 acres of GFMA and 60 acres of Riparian Reserve). Approximately 6.3 MMBF of timber would be offered for sale.

Silviculture

Silvicultural thinning prescriptions for the GFMA and Riparian Reserve would be the same as described in Alternative 1.

Yarding Methods

In addition to cable yarding (with one end suspension), this alternative would utilize ground-based yarding in the GFMA portion of the project area. Approximately 120 acres would be ground-based yarded under this alternative, using the guidelines described in Appendix A for ground-based yarding. Approximately 360 acres would use cable yarding.

Cable yarding (with one-end suspension) would be required in Riparian Reserves and would follow cable yarding design features listed in Appendix A. Skyline cable corridors would be needed across streams and through buffers. No yarding across streams would occur within these skyline cable corridors, except for Streams 2, 4, and 32. Full suspension would be required when yarding logs across these streams.

Fuel Reduction Treatments

The fuel reduction methods would be similar to Alternative 1, but treatments would be applied to 13 acres. The slight increase would be due to additional treatment acres, with a resulting increase in landing piles.

Reserves

Approximately 60 acres of the Riparian Reserve would receive a density management treatment. Minimum stream buffer requirements would be the same for all alternatives (see Appendix A for detailed minimum buffer widths by stream reach).

Roads

No new roads would be constructed, similar to Alternative 1. Approximately 2.3 miles of road renovation would occur on secondary existing roads. Renovation of secondary roads would consist of brushing, scarifying the subgrade to a 14 foot width, and outsloping where possible. The first 230 feet of Road No. 16-7-23.3 would be re-aligned to allow truck traffic to enter Road No. 16-7-23.1 in a southeasterly direction toward the proposed haul route. The primary haul route would be Fisk Road, the same as Alternative 1. Renovated roads and landings would be tilled after harvest is complete, except Road Nos. 16-7-23.2 and 16-7-23.72, which would be blocked and waterbarred only. Road No. 16-7-23.1 (Segment B) would be improved as described in Alternative 1. Other roads would be rocked, and the Nelson Mountain Quarry would be developed, as described in Alternative 1.

3.3 ALTERNATIVE 3 - COMMERCIAL THINNING / DENSITY MANAGEMENT WITH CABLE AND GROUND-BASED YARDING (ROAD RENOVATION AND NEW ROAD CONSTRUCTION)

Alternative 3 would use existing rocked roads, renovated secondary roads, and new road construction to access a thinning area larger than either Alternatives 1 or 2. Approximately 550 acres would be treated (480 acres of GFMA and 70 acres of Riparian Reserve). Approximately 7.0 MMBF of timber would be offered for sale.

Silviculture

Silvicultural thinning prescriptions for the GFMA and Riparian Reserve would be the same as Alternative 1.

Yarding Methods

Both cable and ground-based yarding systems would be used. Approximately 160 acres would be ground-based yarded under this alternative, using the guidelines described in Appendix A. Approximately 390 acres would use cable yarding. Skyline cable corridors would be needed across streams and through stream buffers; full suspension would be required when yarding logs across Streams 2, 4, 28 and 32.

Fuel Reduction Treatments

The fuel reduction methods would be similar to Alternatives 1 and 2, but treatments would be applied to 14 acres. The slight increase would be due to additional treatment acres with a resulting increase in landing piles.

Reserves

Approximately 70 acres of the Riparian Reserve would be thinned with this alternative. Minimum stream buffer requirements would be the same for all alternatives (see Appendix A for detailed minimum buffer widths by stream reach).

Roads

Roads would be similar to those described in Alternative 2, except there would be approximately 1 mile of new road construction in addition to the 2.3 miles of road renovation. New road construction and road renovation would be tilled according to the design features listed in Appendix A (except Road Nos. 16-7-23.2 and the 16-7-23.72, which would be blocked and waterbarred only). The length of primary skid roads requiring tilling would be greater than Alternative 2, due to the greater area of ground-based yarding under this alternative. Existing gravel roads would be rocked using rock obtained from the Nelson Mountain Quarry, as described in Alternative 1.

3.4 ALTERNATIVE 4 - COMMERCIAL THINNING / DENSITY MANAGEMENT WITH AERIAL AND CABLE YARDING (NO NEW ROADS OR ROAD RENOVATION)

Alternative 4 would use existing rocked roads only. Both helicopter and cable yarding systems would be used to thin approximately 550 acres (480 acres of GFMA and 70 acres of Riparian Reserve). Approximately 7.0 MMBF of timber would be offered for sale.

Silviculture

The silvicultural thinning prescriptions for the cable yarded areas of the GFMA and Riparian Reserve would be the same as Alternative 1. The thinning prescription for helicopter yarded areas on steep slopes (= 60%) would have a slightly wider spacing (55-60 residual trees per acre). The wider spacing would be needed to provide for safety of workers and less damage to residual trees. Across the entire project area, the basal area would vary from 110-120 sq. ft. per acre, due to the varying yarding methods and slope conditions.

Yarding Methods

Cable yarding methods would be the same as described in Alternative 1. Helicopter yarding would also be used with this alternative. Design features for both yarding methods are listed in Appendix A. Approximately 390 acres would be accessible to cable yarding using the existing rocked roads, leaving approximately 160 acres to be helicopter yarded (see Alternative 4 map).

Fuel Reduction Treatments

Fuel reduction would be the same as Alternative 1, with 12 acres of treatment. Treatment of slash along the ridge top road, Road No. 16-7-12, would create a ridge-top fuel break. Helicopter yarding operations leave deeper and more uniform slash that yields higher fire intensities and longer flame lengths, should wildfire occur. A ridge top fuel break would allow fire fighting resources reasonably safe access into a fire, and a lower fire intensity zone where a wildfire may be safely attacked. The total amount burned would be the same as Alternative 1.

Reserves

Approximately 70 acres of the Riparian Reserve would be thinned. Minimum stream buffer requirements would be the same for all alternatives (see Appendix A for detailed minimum buffer widths by stream reach).

Roads

Alternative 4 would be similar to Alternative 1, except helicopter landings would be required at the existing BLM stockpile sites (Numbers 09-46, and 09-47) along Road No. 16-7-12 and/or on adjacent private lands (near Road No. 16-7-30 in Section 22 to the West, and near Road No. 16-7-14.1 in Section 14 to the North. These landings would be used for decking logs and as service landings for the helicopter and other equipment. Helicopter landings would be located at least 200 feet from all watercourses. The haul route of logs to the mill would be adjusted to access these helicopter landings; however, the primary haul route to the mill would still be Fisk Road (Road No. 16-6-31). Existing gravel roads and Fisk Road would be re-rocked as described in Alternative 1. The Nelson Mountain Quarry would be used as described in Alternative 1.

3.5 ALTERNATIVE 5 – PROPOSED ACTION – COMMERCIAL THINNING / DENSITY MANAGEMENT WITH CABLE YARDING (ROAD RENOVATION AND NEW ROAD CONSTRUCTION)

Alternative 5 would use existing rocked roads, renovate secondary roads, and construct new road to access the same area as Alternatives 3 and 4, except using only cable yarding.

Approximately 550 acres would be treated (480 acres of GFMA and 70 acres of Riparian Reserve). Approximately 7.0 MMBF of timber would be offered for sale.

Silviculture
Silvicultural thinning prescriptions for the GFMA and Riparian Reserve would be the same as Alternative 1.

Yarding Methods
Under this alternative, only cable yarding methods would be used. Like Alternative 3, skyline cable corridors would be needed across streams and through stream buffers; full suspension of logs would be required when yarding across Streams 2, 4, 28, and 32.

Fuel Reduction Treatments
The fuel reduction methods would be similar to Alternative 3, with treatments applied to 14 acres.

Reserves
Approximately 70 acres of the Riparian Reserve would receive a density management treatment under this alternative. Minimum stream buffer requirements would be the same for all alternatives (see Appendix A for detailed minimum buffer widths by stream reach).

Roads
Roads would be similar to those described in Alternative 3. New road construction and road renovation would be tilled according to the design features listed in Appendix A (except Road Nos. 16-7-23.2 and the 16-7-23.72 which would be blocked and waterbarred only). Existing gravel roads and Fisk Road would be re-rocked as described in Alternative 1. The Nelson Mountain Quarry would be used as described in Alternative 1.

3.6 ALTERNATIVE 6 – NO ACTION

All timber harvest activities would be deferred; no management activities described under the action Alternatives would occur, and no timber would be offered for sale at this time. The Nelson Mountain Quarry would not be developed as a source of rock for maintenance of local roads. If re-rocking becomes necessary in the future, quarry development would be examined at that time.

3.7 ALTERNATIVES CONSIDERED BUT NOT ANALYZED

A density management alternative using all helicopter yarding was considered. Helicopter yarding would eliminate the need to renovate existing old roads and to construct new roads; however, Alternative 4 (cable/helicopter) would also achieve this. Due to the existing rocked roads already in place, and the relatively high cost of an all helicopter yarding alternative, this alternative was removed from further analysis.

An alternative that considered using a commercial source of rock for resurfacing the roads within the project area was considered but dropped, because (1) the Nelson Mountain Quarry lies within the project area and is readily available; and (2) the cost of using a commercial source was estimated to be approximately $70,000 more than using the existing quarry.

Table 1. Comparison of Alternatives

	Alternative 1 ***No New Road Const. No Road Renovation (Cable yarding only)***	**Alternative 2** ***Road Renovation No New Road Const. (Cable and ground based yarding)***	**Alternative 3** ***New Road Const. and Road Renovation (Cable and ground based yarding)***	**Alternative 4** ***No New Road Const. No Road Renovation (Helicopter and Cable yarding)***	**Alternative 5 Proposed Action** ***New Road Const. and Road Renovation (Cable yarding only)***
Harvest Area (MMBF*/Acres) ***Matrix*** ***Riparian Reserve*** ***Total***	 4.2 MMBF/325 acres 0.7 MMBF/55 acres 4.9 MMBF/380 acres	 5.5 MMBF/420 acres 0.8 MMBF/60 acres 6.3 MMBF/480 acres	 6.2 MMBF/480 acres 0.8 MMBF/70 acres 7.0 MMBF/550 acres	 6.2 MMBF/480 acres 0.8 MMBF/70 acres 7.0 MMBF/550 acres	 6.2MMBF/480 acres 0.8 MMBF/70 acres 7.0 MMBF/550 acres
Silviculture (Matrix & Riparian Reserve)	Thin to a density of 60-90 TPA	Thin to a density of 60-90 TPA	Thin to a density of 60-90 TPA	Thin to a density of 60-90 TPA, except on slopes =60% that are helicopter yarded, thin to a density of 55-60 TPA	Thin to a density of 60-90 TPA
New Road Construction	No new road construction	No new road construction	Approx. 1 mile new construction, primarily in Lake Cr Watershed	No new road construction	Approx. 1 mile new construction, primarily in Lake Cr Watershed
Road Renovation	No road renovation	Approx 2.3 miles of road renovation; natural surface only	Approx 2.3 miles of road renovation; natural surface only	No road renovation	Approx 2.3 miles of road renovation; natural surface only
Road/Skid Trail Decommissioning	None	Till all renovated roads, except Rd Nos. 16-7-23.2 and 23.72 blocked and waterbarred only. Till primary skid trails.	Till all renovated roads, except Rd Nos. 16-7-23.2 and 23.72 blocked and waterbarred only. Till primary skid trails and newly constructed roads.	None	Till all renovated roads, except Rd Nos. 16-7-23.2 and 23.72 blocked and waterbarred only. No primary skid trails created; therefore no decomm necessary
Yarding (acres) ***Cable*** ***Ground-based*** ***Helicopter***	 380 0 0	 360 120 0	 390 160 0	 380 0 170	 550 0 0
Yarding Costs	Est. $154/MBF**	Est. $117-154/MBF	Est. $117-154/MBF	Est. $154/MBF-cable Est. 382-746/MBF-heli.	Est. $154/MBF
Fuel Treatment	12 acres-excavator pile, cover and burn; est. $3720	13 acres-excavator pile, cover and burn; est. $4030	14 acres-excavator pile, cover and burn; est. $4340	12 acres-excavator pile, cover and burn; est. $3720	14 acres-excavator pile, cover and burn; est. $4340

*Million Board Feet **Thousand Board Feet

4.0 EXISTING CONDITIONS

4.1 INTRODUCTION

Lake Creek Watershed

The Lake Creek watershed is located in Lane and Benton Counties, northwest of the city of Eugene, and contains the communities of Blachly, Horton, Triangle Lake and Greenleaf. The watershed lies at the northeastern headwaters of the Siuslaw River Basin, and contains approximately 68,800 acres. The current landscape in the Lake Creek watershed is largely influenced by the checkerboard ownership pattern between BLM (federal) and private interests. Primary post-European settlement uses of the watershed have been logging and agriculture. BLM manages approximately 45% of the watershed. Industrial timber companies manage 25%. The State of Oregon manages 10%. The remaining 20% of the watershed is in other private ownership. *(Lake Creek Watershed Analysis, 1995).*

Approximately 20 percent of BLM forests within the Lake Creek Watershed are in the 0-30 year age classes. Approximately 60 percent are in the 40 to 70 year age classes, and approximately 20 percent are in the late successional or 80 year and older age classes *(based on Forest Operations Inventory (FOI) stand data 2002).*

Long Tom Watershed

The Long Tom Watershed is located in Lane and Benton Counties, west of Eugene. The watershed lies at the southwestern headwaters of the much larger Upper Willamette River Basin. The watershed contains the small communities of Veneta, Monroe, and Junction City. The Long Tom Watershed contains approximately 262,800 acres of which approximately 21,800 acres (8%) are managed by the BLM.

The BLM forest lands in the watershed are concentrated in the Coast Range foothills or "Valley Fringe". Forestry and agriculture are the primary land uses. Commercial forests are located primarily in the upper reaches of the watershed *(Long Tom Watershed Analysis, October 2000).*

The Long Tom "Valley Fringe" (Coast Range foothills) is highly dissected relative to ownership, containing a checkerboard ownership pattern. The BLM manages about 20 percent (20,324 acres) of the "Valley Fringe" of the Long Tom Watershed. The State of Oregon administers approximately 2 percent of the "Valley Fringe" lands within the Long Tom watershed and the remaining is within private land holdings *(Long Tom Watershed Analysis, October 2000).*

Approximately 40 percent of BLM forests within the Long Tom Watershed are in the 0-30 year age classes. Approximately 40 percent are in the 40 to 70 year age classes, and approximately 20 percent are in the late successional or 80 year and older age classes *(based on FOI stand data 1999).*

Riparian Reserves

The Lake Creek and Long Tom Watershed Analyses assessed the condition of the Riparian Reserves in the watersheds and recommended guidelines under which they may be treated (Lake Creek Watershed Analysis, Chapter 5) (Long Tom Watershed Analysis, Chapter 5.).

The plants and animals in this project area do not differ significantly from those discussed in the Eugene District Proposed Resource Management Plan/Environmental Impact Statement (RMP EIS) (Chapter 3). The following resources are also discussed in greater detail in the project file.

Nelson Mountain Quarry
The Nelson Mountain Quarry lies within the project area. It is an existing quarry, originally developed in 1967, encompassing approximately 10 acres. The quarry was last used in 1998, when Roseburg Resources Company extracted approximately 15,000 cubic yards of rock.

4.2 STAND AND ADJACENT STAND DESCRIPTION

Forests in the project area are relatively homogenous and young (42 to 45 year old), with a moderately closed canopy dominated by second-growth Douglas-fir, and few large residual trees. The overstory has a smaller component of western hemlock, western red cedar, golden chinquapin, white oak, and red alder. Sparsely developed understory and patchy brush is present within the project area. The understory trees are mostly western hemlock with some western red cedar. Brush is highly variable in density, ranging from light and scattered salal to heavy patches of rhododendron and vine maple.

Coarse woody debris is found throughout the area in moderate amounts. All decay classes are present, but large diameter legacy logs are uncommon. There are few standing snags, although in areas with denser canopies, suppression mortality snags of 6" to 1' are more common.

Land surrounding the project area include BLM-managed land with stands similar to the project area and private commercial forest land with young timber or recently harvested areas.

4.3 WILDLIFE

Threatened and Endangered Species
The stand does not contain trees supporting suitable nesting structures for spotted owls, marbled murrelets, or bald eagles. Two spotted owl activity centers are located approximately 0.5 mile from the project area. There are no records of spotted owl activity in the project area. Owl activity in this vicinity has been monitored annually to maintain up-to-date information.

In addition, there are approximately 10 acres of suitable nesting habitat for the northern spotted owl and marbled murrelet 0.1 mile to the northeast of the project area. This area is surveyed annually for spotted owls but not for murrelets. Because of the lack of surveys, murrelet status of this 10-acre stand is unknown and the stand will be considered occupied.

The project area does qualify as dispersal habitat for the northern spotted owl. Factors to consider when evaluating the effects to spotted owl dispersal habitat are the amount available in the vicinity, its location, and arrangement among other habitat types. The amount of dispersal habitat within the Lake Creek Watershed is approximately 51% and the amount of this habitat in the Long Tom Watershed is 56% (50% is considered adequate for owl dispersal). When only the quarter township that is centered around the proposed action is considered, 58 percent of the federal land functions as dispersal habitat. The project area is approximately four miles west of the Willamette Valley, which is agricultural land and not habitat for northern spotted owls. Forested land lies in all other directions where owls would be expected to disperse.

Survey and Manage Species
No surveys for Survey and Manage wildlife species are required, and no known sites occupied by these species exist within the project area.

Other Special Status Species

No other special status species or unique habitats were encountered within the project area during wildlife surveys.

4.4 SOILS

Soil Compaction and Erosion

Predominant soils found in the project area include Digger-Rock Outcrop complex (400 acres), Honeygrove (190 acres), and Peavine (40 acres) (U.S.D.A. 1987). Smaller acreages of Klickitat and Bohannon are also present.

Digger-Rock outcrop complex (50-85% slope) is moderately deep (27-37 inches). The surface layer is a gravelly loam, and the subsoil may contain between 15 and 25% clay. The surface may be littered with stones. Permeability is moderately rapid and runoff is rapid. Digger soils tend to develop on steep slopes, and have a high hazard of erosion and slumping in disturbed areas. Windthrow is a hazard when the soil is wet and winds are strong. Disturbed areas are subject to rill and gully erosion and sloughing.

Honeygrove soils are deep (40-60 inches). The surface layer is a silty clay loam, and the subsoil is up to 60% clay. There may be up to 15% rock fragments present. Permeability is moderately slow. These soils are susceptible to compaction. Physical and chemical data of the Honeygrove soil indicate that at 15 Bar (wilting conditions), between 0 and 8.1 inches, the soil moisture content is 37.1% (Huddleston 1982).

Peavine soils are moderately deep (30-40 inches). The surface layer is a silty clay loam; the subsoil is silty clay with soil horizons containing between 30-60% clay. Rock fragment content in the soil profile is typically less than 20%. Permeability is moderately slow due to heavy textures and absence of coarse fragments. These soils are susceptible to compaction. Physical and chemical data of the Peavine soil indicate that at 15 Bar (wilting conditions), between 0 and 4 inches, the soil moisture content is 22.3% (Huddleston 1982).

Recovery of Compacted Soils

Field reconnaissance indicates that remnant compaction from previous harvest entries is evident and that recovery of the Honeygrove soil is slow. Skid trails are still evident on the lower gradient backslope landform. Honeygrove soils are susceptible to compaction and have been shown to remain above 45% in soil moisture content during the dry season in the Coast Range (Sidle and Drlica, 1981). These soil properties prevent successful amelioration of skid trails on Honeygrove soils.

Soil compaction in western Oregon from ground-based harvesting has a longevity of at least one rotation. In soil with 40% clay, Perry (1964) estimated that 40 years would be needed for the soil to naturally recover to the density of undisturbed soil. Wert and Thomas (1981) showed that natural recovery from soil compaction of Preacher soil (20-35% clay content) had not occurred 32 years after initial logging.

4.5 AQUATIC AND RIPARIAN RESOURCES AND FISHERIES

The west portion of the project area, which includes most of the treatment area, is located in the Fish Creek drainage, in the mid- to upper-Lake Creek watershed. The east portion of the project area lies within an unnamed drainage of the Long Tom. Elevations range from 920 feet to 2100

feet in elevation. Higher elevations (1900-2100 feet elevation) along the divide between the two watersheds are high enough to be possibly affected by rain-on-snow (ROS) events.

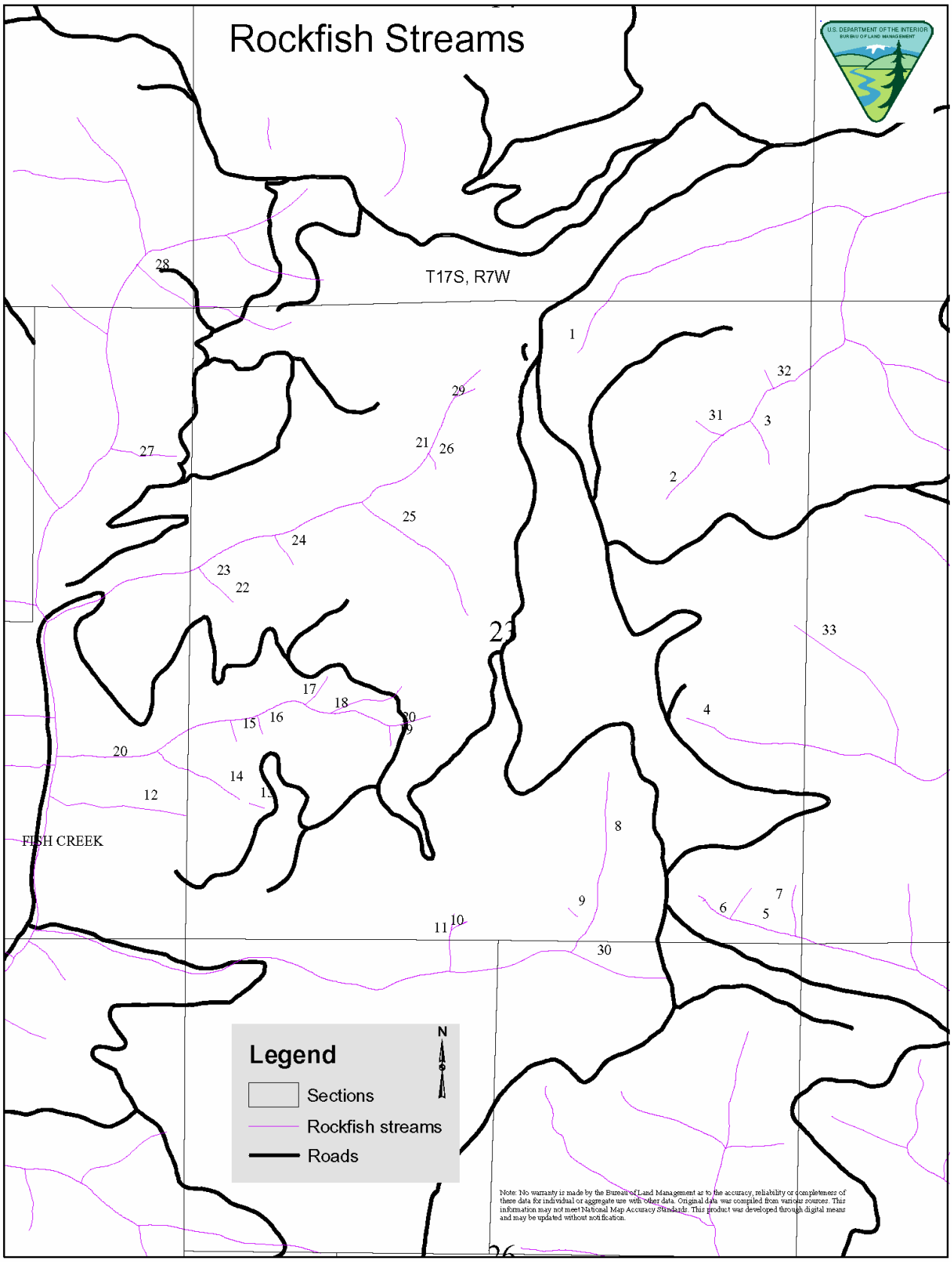
The Fish Creek drainage is a large tributary to Lake Creek and provides spawning and rearing habitat for fall-run Chinook salmon, winter-run steelhead, coho salmon, cutthroat (resident and sea-run), and non-salmonid species such as dace, sculpin, and perhaps Pacific lamprey. Other species found in the sub-basin, but not necessarily Fish Creek, include suckers, squawfish, and redside shiner. Coho salmon are currently listed as a threatened species (August 10, 1998) under the Endangered Species Act (ESA), and Fish Creek has been designated as critical habitat for the species.

The Long Tom River, and its tributaries above Fern Ridge Reservoir, provides spawning and rearing habitat for salmonid (trout type species) and non-salmonid fish species. Cutthroat and sculpin spawn and rear primarily in the upper reaches, but can be found throughout the system where suitable habitat is present. In addition, dace, redside shiner, and western brook lamprey may be found throughout the watershed. Fern Ridge Dam has no fish passage facility; therefore, no anadromous species, such as spring-run Chinook, are present in the middle and upper portions of the watershed. Some spring-run Chinook (listed as threatened under the ESA) have entered the lower Long Tom in the fall when higher flows were released from Fern Ridge Reservoir, and juvenile Chinook may rear in the lower portion of the river during winter (Long Tom WA, 2000).

Project area streams occur as low-order streams, and are located at the mid and upper-slope position. Stream channels have moderate (3%-20%) to steep (>20%) gradient. Large woody debris and large boulder material create a bedform of vertical steps with moderately deep scour pools, and contribute to the overall stable channel condition. Channel material is predominately boulders and large wood, with lesser amounts of cobble, gravel and sand. Some exposed bedrock is sporadically spaced. These streams are source and transport streams which provide short-term storage sites for sediments, and can be associated with mass wasting events. The landform tends to be moderate to steep, hillslope constrained, with colluvial deposition in a narrow and confined valley. Some riparian hillslope failures were observed on steeper slopes; overall, however, riparian sideslopes throughout the project area appear to be well vegetated and in a stable condition.

Suitable or accessible fish habitat is very limited throughout the project area. Most reaches have high channel gradients or very steep step-over boulder/log features that restrict further upstream migration. Stream No. 21 is the only fish bearing reach within the project area. A small cutthroat trout population (resident) was documented up to the confluence of Stream 23. Beyond this point, increased channel gradient and high step-over boulder features restrict upstream migration. This population is most likely isolated due to a potential downstream barrier near Road No. 16-7-30. Habitat can be characterized as a plunge pool/riffle sequence with pools averaging 1-1.5 feet in depth. From the confluence of Fish Creek upstream to Stream 23, there is an estimated 1,800 feet of suitable fish habitat.

Streams 20 and 30 are fish bearing in lower reaches. Fish use does not extend into or near the project area (>400 ft. from the project boundary). The closest potential coho or steelhead habitat is Stream 30, which is located approximately 400 feet from the southwest corner of the project area. Distance to Fish Creek, which is the primary spawning habitat for coho, ranges from 1,200 to 1,400 feet from the project boundary. Coho and steelhead are not expected to use project area streams due to the lack of required habitat features, such as residual streamflow and pool depth.


Rockfish Streams
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
T17S, R7W
FISH CREEK
28
27
29
21
26
25
24
23
22
1
32
31
3
2
33
4
17
18
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9
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14
12
8
9
7
6
5
11
10
30
Legend
Sections
Rockfish streams
Roads
N
Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability or completeness of these data for individual or aggregate use with other data. Original data was compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Road No. 16-7-23.1 has a high risk of sediment delivery to Streams 20 and 18. The road grade has moderate to steep gradients; the road surface lacks rock and shows signs of surface erosion. Cutbanks lack vegetation, are steep, and eroding. Relief culverts have high diversion potential, are in poor condition, and are not properly functioning. Culverts located at Streams 18 and 20 are undersized and are in poor condition. The road-stream crossing at Stream 20 has severe erosion occurring at the inlet and outlet of the culvert, as a result of the culvert being undersized for this size stream.

From the project area, the primary log haul route would be over Fisk Road to County Road 4348. Both roads are located in the Long Tom Watershed. Fisk Road (Road No. 16-6-31) is maintained by the BLM. It is an older, gravel surfaced road, which is approximately 2.65 miles long and located predominately on a gentle to moderate gradient ridgetop. The road system crosses no fish bearing streams, and no perennial streams. The road system potentially crosses the headwaters of two ephemeral streams. The road has adequate relief drainage, with ditchlines and cutslopes well vegetated. However, the surface rock is deteriorating and could not withstand log haul during wet weather. These road systems are not located in a watershed where there are listed (ESA) fish species.

County Road 4348 is a paved road, and is maintained by Lane County. The road has adequate relief drainage and is in excellent condition.

4.6 OHV USE

The project area has 12 spur roads, which have not been maintained or used for transportation. The condition of these roads varies from being gated, having little to no motorized use, overgrown from vegetation, to blending in (not looking like a road at all) with the surrounding area. Opportunity for OHV use is currently limited in the project area. However, approximately 405 acres of this section have flat to moderate terrain where OHV activity could occur if it became available (as by removing trees and vegetation). The rest of the section consists of steep terrain, which would deter OHV users from attempting off-road travel. Observations in November, 2002 and March, 2003, showed little evidence of OHV activity within the proposed project area (Section 23). However, in adjacent BLM Sections 13 and 25, users have created several new unauthorized OHV trails between road systems, causing soil displacement and runoff in certain areas, as well as destroying vegetation.

4.7 BOTANY

Botanical Surveys
Vascular plant surveys were conducted in 2002 and 2003. Non-vascular plant (mosses, liverworts and lichens) surveys were conducted in 2002. Vascular and non-vascular plant diversity is low across the project area, with riparian areas and rocky areas the main habitats of interest. Garry oaks occur at one rock outcrop with associated species of foliose cyanolichens, contributing to the diversity of non-vascular communities in the project area.

Special Status and Survey & Manage Species
No federally listed Threatened or Endangered plant species were located during botanical surveys. No Survey and Manage species were found.

No sensitive non-vascular species were found, but vascular plant surveys found several sites of an “uncommon plant” currently on the Eugene District Review list, *Silene campanulata* subspecies *glandulosa* (Bellflower catchfly). This perennial flowering plant was found on rocky scree slopes with little canopy. This unmodified habitat is the seed source for a population on a

roadcut below it, where the road cuts into sandstone and exposes a dry rock outcrop. Below the road, one small plant was found under dense (80%) canopy. This is not ideal habitat for *Silene*, which usually thrives in open, sunny locations.

Noxious Weeds and Non-native Plants

Scotch broom, an invasive noxious weed, was found only sparsely along roadsides in the project area. Although these plants were manually pulled in 2002, more seed is likely to be transported into the project area by vehicles. Other noxious weeds present include *Hypericum perforatum* (St. John's wort), *Senecio jacobaea* (Tansy ragwort), and *Cirsium vulgaris* (Bull thistle); all have a fairly light, roadside distribution. Other non-natives with invasive tendencies include *Ranunculus repens* (Creeping buttercup), found in wet ditches, and *Digitalis purpurea* (Foxglove,) which is quite dense along roads in places.

Of more concern is *Centaurea pratensis* (Meadow knapweed). This is an invasive noxious weed with toxic properties and very deep roots. It is difficult to extirpate once it has arrived in an area, especially without the use of chemical herbicides, and seeds are widely scattered by animals and vehicles. Knapweed and other weeds transported in by vehicles often remain confined to the roadsides when closed canopy conditions are adjacent. Meadow knapweed has not been found within the project area; however, it is found in large concentrations on the Horton Road, approximately three miles to the north.

4.8 FUELS/ DOWNED WOOD

The project area is 8 miles west of the Willamette Designated Area (DA) as defined in the State Implementation Plan for air quality.

Ladder fuels are generally light and scattered, with a few small areas of heavy ladder fuel. Very few existing snags were observed and most were of small diameter. Some coarse woody debris was observed in the higher decay classes. The existing dead and down wood fuels component is approximately 3.3 tons per acre of fine fuels (0-3 inches) and a total of 21.7 tons per acre.

4.9 CULTURAL RESOURCES

A cultural resource inventory of the proposed area has not been conducted. Past pre-project cultural resource surveys conducted in conjunction with surface-disturbing actions in the Coast Range physiographic province have not resulted in the discovery of significant cultural properties. Following the signing of the national Programmatic Agreement, the Oregon BLM and the Oregon Historic Preservation Office developed a protocol agreement recognizing the paucity of discoverable historic properties in the Coast Range. Under this protocol, pre-project cultural resource surveys will not be conducted in the Coast Range physiographic province. The Protocol Agreement does set forth procedures covering post-project cultural resource surveys which would be implemented.

5.0 ENVIRONMENTAL CONSEQUENCES

This section explains and summarizes the direct, indirect, short-term, long-term, and cumulative effects of all the alternatives in relation to the identified issues.

This environmental assessment incorporates the analysis of environmental consequences, including cumulative effects, in the USDA Forest Service and USDI Bureau of Land Management “Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and

Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl," February 1994, (Chapters 3 & 4) and in the Eugene District "Final Proposed Resource Management Plan/Environmental Impact Statement," November 1994 (Chapter 4). These documents analyze most effects of timber harvest and other related management activities. None of the alternatives in this assessment would have effects on resources beyond the range of effects analyzed in the above documents. The following section supplements those analyses, providing site-specific information and analysis particular to the alternatives considered here.

Past and Reasonably Foreseeable Timber Sale Related Actions

Lake Creek Watershed. Past BLM timber sales implemented in the Lake Creek watershed have included Second Wind and the currently active Sammy Hill density management treatments, both located in Late-Successional Reserve. Past sales in the GFMA, included the Ten High and Hult View thinnings. Other GFMA sales being analyzed for fiscal year 2003 and 2004 in the Lake Creek Watershed include Rusty Nel (a potential regeneration harvest), and Nelson Way (potential thinning) timber sales. Future timber sale planning in the Lake Creek Watershed will focus on additional thinning in 2005.

Long Tom Watershed. Timber sales that have been sold but not yet logged in the Long Tom Watershed include Bishop's Hat thinning and Little Al thinning. It is likely that some stands on BLM-administered lands in the Long Tom Watershed will be treated with commercial thinning or regeneration harvest, given that the surrounding sections are in the Matrix LUA. Matrix sales being analyzed in the Long Tom Watershed for fiscal year 2004 include 7th Paradise, Dead Horse, and Get Ready (all potential thinnings). The Get Ready thinning is located in T16S, R7W, Section 25, directly to the southeast from the Rock Fish project area. This 135-acre sale is the only other reasonably foreseeable future timber harvest on BLM-administered land within this quarter township.

On private lands in both watersheds, more intensive timber management actions, including clearcutting and broadcast burning, are occurring and are likely to continue in the foreseeable future.

5.1 UNAFFECTED RESOURCES

The following resources are either not present or would not be affected by any of the alternatives: Areas of Critical Environmental Concern; prime or unique farm lands; wetlands; Native American religious concerns; solid or hazardous wastes; Wild and Scenic Rivers; Wilderness; minority populations; and low income populations.

None of the alternatives would affect any known Threatened, Endangered, Survey and Manage, sensitive or non-vascular plant species. The botany design features (listed in Appendix A) would remove any likelihood that the Bellflower catchfly sites would be negatively impacted.

Burning activities, under all action alternatives would be consistent with Oregon Smoke Management Regulations. The proposed burning would be of very short duration and would have no local short-term or long-term impacts on air quality. All burning would meet the State Implementation Plan for smoke management and the National Ambient Air Quality Standards set forth in the Clean Air Act. Fuels management will not be addressed further in this analysis.

Table 2. Impact Comparison Table

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
Impacts on Owl Dispersal Habitat ***Measures:*** *post harvest canopy closure and acres of dispersal habitat*	Canopy closure >40%; no reduction in dispersal acres; quality temporarily reduced on 380 acres	Canopy closure would remain >40%; no reduction in available dispersal acres; quality of dispersal habitat temporarily reduced on 480 acres	Canopy closure would remain >40%; no reduction in available dispersal acres; quality of dispersal habitat temporarily reduced on 550 acres	Canopy closure would remain >40%; no reduction in available dispersal acres; quality of dispersal habitat temporarily reduced on 550 acres	Canopy closure would remain >40%; no reduction in available dispersal acres; quality of dispersal habitat temporarily reduced on 550 acres	No change in canopy closure; no reduction in available dispersal acres; no change in quality of dispersal habitat
Impacts on Soil Compaction ***Measures:*** *acres of compaction after amelioration*	Negligible because no ground-based yarding would occur	12 acres remain compacted after amelioration; allowable areal extent after amelioration is 2.4 acres	16 acres remain compacted after amelioration; allowable areal extent after amelioration is 3.2 acres	Negligible because no ground-based yarding would occur	Negligible because no ground-based yarding would occur	No new compaction
Impacts on ACS Objectives ***Measures:*** *ACS objective-effect determination (maintain, restore, or retard) for each alternative.*	Accelerate attainment of Objectives 1, 3, 9	Accelerate attainment of Objectives 1, 3, 9	Accelerate attainment of Objectives 1, 3, 9	Accelerate attainment of Objectives 1, 3, 9	Accelerate attainment of Objectives 1, 3, 9	Would not accelerate attainment of Objectives 1, 3, 9
Impacts on OHV Use ***Measures:*** *acres available for harvest that contain flat to moderate topography*	Increased risk of OHV use on 340 acres, 12 old roads	Increased risk of OHV use on 385 acres, 5 old roads	Increased risk of OHV use on 385 acres, 5 old roads	Increased risk of OHV use on 385 acres, 12 old roads	Increased risk of OHV use on 385 acres, 5 old roads	Potential risk of OHV use on 12 old roads
Impacts on the Spread of Noxious Weeds ***Measures:*** *acres of soil and vegetation disturbance*	Increased risk of spread of noxious weeds on 7.6 acres	Increased risk of spread of noxious weeds on 9.6 acres	Increased risk of spread of noxious weeds on 11 acres	Increased risk of spread of noxious weeds on 7.6 acres	Increased risk of spread of noxious weeds on 11 acres	No increased risk

5.2 ISSUE 1 - What are the effects of timber harvest and associated activities on northern spotted owl dispersal habitat?

The function of dispersal habitat is to provide temporary roosting and foraging opportunities for transient owls seeking a longer term territory. As canopy closure and understory vegetation become less dense, owls become more vulnerable to predation. Also, more open forest conditions may provide lower quality habitat for owl prey species, resulting in a reduced prey base for owls.

Alternative 1 - No New Road Const. or Road Renovation; Cable Yarding

Under this alternative, the quantity of dispersal habitat within the project area would be unchanged. The average post harvest canopy closure would be reduced, but would remain above 40%, so the stand would still be considered dispersal habitat for spotted owls. However, the quality of 380 acres of dispersal habitat would be temporarily degraded as a result of thinning. Reduced canopy closure, modification of the sub-canopy, and loss of understory vegetation would temporarily lessen the quality of dispersal habitat until the canopy closes to pre-harvest levels (approximately 10-20 years).

Alternative 2 - Road Renovation with No Road Const.; Cable and Ground-based Yarding

The effects of this alternative would be similar to those described in Alternative 1, except an additional 100 acres (480 acres total) of dispersal habitat would be thinned. Canopy closure would be reduced on 480 acres. However, the amount of dispersal habitat within the project area would be unchanged, because post-harvest canopy closure would remain above 40%. Disturbance to understory vegetation and reduced cover for the owl and prey species would be greater than described under Alternative 1 due to a larger treatment area and additional surface disturbance caused by ground-based yarding. The quality of dispersal habitat on 480 acres would be temporarily degraded until the canopy closes to pre-harvest levels (approximately 10-20 years).

Alternative 3 - New Road Const. and Road Renovation; Cable and Ground-based Yarding

Effects of this alternative would be similar to Alternative 2, except 550 acres of dispersal habitat would be thinned. Canopy closure would be reduced on 550 acres. However, the amount of dispersal habitat within the project area would be unchanged, because post-harvest canopy closure would remain above 40%. Disturbance to understory vegetation and reduced cover would be greater than Alternative 2 due to a larger treatment area and a mile of new road construction. The quality of dispersal habitat on 550 acres would be temporarily degraded until the canopy closes to pre-harvest levels (approximately 10-20 years).

Alternative 4 - No New Road Const. and No Road Renovation; Helicopter/Cable Yarding

This alternative would be similar to Alternative 3, except that Alternative 4 would have less disturbance to understory vegetation and cover due to the logging systems applied (cable and helicopter). The use of helicopters would also eliminate the need for road renovation and road construction required by Alternative 3. Canopy closure would be reduced on 550 acres. However, the amount of dispersal habitat within the project area would not change, because post-harvest canopy closure would remain above 40%. Disturbance to understory vegetation and reduced cover would be temporarily degrade the quality of dispersal habitat on 550 acres until the canopy closes to pre-harvest levels (approximately 10-20 years).

Alternative 5 – Proposed Action; New Road Const. and Road Renovation; Cable Yarding

This alternative would be similar to Alternative 3, except that Alternative 5 would use a cable logging system over the entire 550-acre harvest area. Canopy closure would be reduced on 550 acres. However, the amount of dispersal habitat within the project area would not change, because post-harvest canopy closure would remain above 40%. Disturbance to understory vegetation and reduced cover would be somewhat less than Alternative 3 because of the logging system used. This alternative would still temporarily degrade the quality of dispersal habitat on 550 acres until the canopy closes to pre-harvest levels (approximately 10-20 years).

Alternative 6 - No Action

Under this alternative, the quantity of dispersal habitat would remain the same and the quality would not experience disturbance in its development.

Cumulative Effects - All Action Alternatives

When considered together, the Rock Fish and Get Ready projects could temporarily reduce the quality of dispersal habitat on as many as 690 acres, or 25% of the BLM-managed land within the quarter township, for approximately 10-20 years. Although the quality of habitat would be reduced, no dispersal habitat would be lost from either project area. Adequate dispersal habitat in the quarter township would remain. It is expected that the Lake Creek and Long Tom watersheds would continue to provide adequate dispersal habitat for the spotted owl, although the spacial arrangement of these habitats would change over time as harvests continue and other stands mature.

5.3 ISSUE 2 - What are the effects of timber harvest and associated activities on soil compaction and productivity?

Alternative 1 - No New Road Const. or Road Renovation; Cable Yarding

The direct effect of cable logging is soil compaction from landings and cable corridors, but with the use of best management practices as shown in the design features, negligible compaction would occur.

Alternative 2 - Road Renovation with No Road Const.; Cable and Ground-based Yarding

Under Alternative 2, a total of 480 acres would be logged, including approximately 120 acres of ground-based yarding. The direct effect of ground-based yarding is soil compaction from landings and skid trails. In order to have negligible productivity effect from ground-based yarding, the RMP standard is that compaction be limited to 2% or less of any treated unit after amelioration practices. To meet this standard, the RMP further requires that skid trails and landings be limited to no more than 10% of the ground-based yarding area, under the assumption that, for most soils, amelioration practices effectively reduce compaction on 80% of the typical skid trails and landings. Thus, 2% of the ground-based yarding area could be left in a compacted condition and still comply with the RMP.

Under Alternative 2, skid trails and landings would comprise approximately 12 acres (10%) of the ground-based yarding area, and would be subsoiled or tilled upon project completion. To meet the RMP standard, the allowable areal extent of total compaction after amelioration would be limited to 2.4 acres. However, almost all of the ground-based yarding area would be located on

Honeygrove soil, where subsoiling or tilling is often not effective at ameliorating compaction. Therefore, mitigation efforts may not reduce compaction to the 2% standard.

Alternative 3 - New Road Const. and Road Renovation; Cable and Ground-based Yarding

Under Alternative 3, a total of 550 acres would be logged, including approximately 160 acres of ground-based yarding. The direct effect of ground-based yarding is soil compaction from landings and skid trails. To meet the RMP standard described in Alternative 2, the areal extent of total compaction after amelioration would be limited to 3.2 acres. Approximately 16 acres (10%) of the ground-based yarding area would be occupied by skid trails and landings. Almost all of the ground-based yarding area would be located on Honeygrove soil, where subsoiling or tilling skid trails is often not effective at ameliorating compaction. Therefore, mitigation efforts may not reduce compaction to the 2% standard.

Alternative 4 - No New Road Const. and No Road Renovation; Helicopter/Cable Yarding

The effects to soil compaction under Alternative 4 would be the same as under Alternative 1. Approximately 550 acres would be logged under Alternative 4 (390 acres by cable, and 160 acres by helicopter). Helicopter yarding is not known to have a direct effect on compaction except at designated landings; therefore, the areal extent of compaction would not be expected to exceed that of Alternative 1.

Alternative 5 – Proposed Action; New Road Const. and Road Renovation; Cable Yarding

The direct effect of cable logging is soil compaction from landings and cable corridors, but with the use of best management practices as shown in the design features, almost no compaction would occur. Under Alternative 5, there would be a negligible amount of soil compaction due to yarding activities because a cable system would be used.

Alternative 6 - No Action

No additional soil compaction or soil displacement would occur because no harvesting or new road construction would be conducted. This alternative would have the least effect on soil compaction amongst all alternatives.

Table 3. Potential Compaction After Amelioration

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
Potential Compaction After Amelioration	Negligible	12 acres	16 Acres	Negligible	Negligible	0 acres

Cumulative Effects - All Alternatives

None of the action alternatives would be expected to have cumulative effects on soil compaction within the Lake Creek or Long Tom Watersheds.

Continued management of BLM lands and on-going right-of-way agreements with adjacent landowners may result in additional permanent new roads being built within the watersheds. BLM's road management program plans to decommission a total of approximately 50 miles

(46%) of the 110 miles of BLM controlled road in the Long Tom Watershed road system (EA- 01-09). To date, BLM has completed approximately 16 miles of this road decommissioning in the Long Tom Watershed. Most secondary road closures and decommissioning to date in the Lake Creek Watershed on BLM lands have occurred in conjunction with timber sales and other projects.

5.4 ISSUE 3 - What are the effects of timber harvest and other activities on attainment of ACS objectives and coho salmon habitat?

Table 4, in Appendix B, shows the relationships among the nine Aquatic Conservation Strategy (ACS) objectives, the measurable factors/indicators developed by the National Oceanic and Atmospheric Administration (NOAA Fisheries), and site-specific effect of actions proposed in the Rock Fish Timber Sale. Table 4 demonstrates that the actions proposed under the different alternatives would meet the Aquatic Conservation Strategy objectives and would maintain or restore specific aquatic habitat indicators essential to coho salmon. A detailed analysis of each aquatic habitat indicator listed in Table 4 is included in the project file.

Site-specific conditions in the proposed project area are consistent with the general discussion in the Lake Creek and Long Tom Watershed Analyses, which identified management opportunities for silvicultural treatments in Riparian Reserves. Those analyses specifically addressed treatments in dense young stands (< 80 years) -- the condition of the stands in the project area -- with the objective of speeding development of large trees (Long Tom Watershed Analysis, Chapter V, page 9; Lake Creek Watershed Analysis, Chapter 7, page 7).

Alternative 1 - No New Road Const. or Road Renovation; Cable Yarding

Objective 1: Thinning the Riparian Reserves within the project area would likely contribute to the restoration of the diversity, and complexity of watershed and landscape-scale features. Mid-seral, uniform Douglas-fir stands constitute the majority of the Riparian Reserve in the Lake Creek and Long Tom Watersheds, including those found in the project area. These stands are low in species diversity and structural complexity; thinning would be expected to increase individual tree growth rates and would speed the development of late-successional structural characteristics, such as larger trees, snags, and down wood, over the long term.

Untreated riparian areas would be designated on all stream reaches to protect streambank and channel stability, and streamside vegetation. There would be no new skid trails, landings, new road construction, or road renovation located within the Riparian Reserves under this alternative.

Cable corridors may pass through Riparian Reserves, requiring a number of trees to be felled in the untreated Riparian Reserve areas. These felled trees would be left on-site, and would result in a small and localized benefit to Riparian Reserves as an immediate pulse of large woody debris. No cable yarding of logs across streams would occur except at Stream 4. Full suspension of logs would be required when yarding logs across Stream 4 under this alternative.

Objective 2: Alternative 1 would maintain spatial and temporal connectivity within and between watersheds. All nonfish-bearing streams within the project area would have untreated buffers of 200, 100, or 50 feet on either side of the stream. The fish-bearing portion of Stream 20 would have an untreated buffer of at least 200 feet either side of the stream. These untreated buffers would provide protection to oversteepened streambanks and headwalls. The untreated buffers around all streams and other hydrologic features would protect drainage network connections. There would be no new road/stream

crossings. The thinned stands up-slope of riparian areas would retain adequate supplies of future large woody material. Thinning would speed the development of late-successional stand characteristics, and therefore would contribute to the restoration of a network of late-successional Riparian Reserves over the long-term.

Objective 3: This alternative would maintain the physical integrity of the aquatic system in the short term, but would contribute to restoration in the long term. The untreated areas within Riparian Reserves would ensure that the thinning would: 1) maintain streambank integrity or tree/shrub root strength and undercut banks; 2) protect stable large woody debris in the channel; 3) protect stream temperature; and 4) reduce the potential for sedimentation. It is unlikely that management activities within the project area would cause alteration of peak water flows that could affect channel morphology (refer to ACS 6). Thinning in the outer portions of Riparian Reserves would speed the development of future large woody debris, which would contribute to the restoration of the physical integrity of the aquatic ecosystem in the long term. Improvements to Road No. 16-7-23.1B, such as upgrading and adding relief culverts, upgrading stream crossing culverts, rock placement, and additional road improvement, would ameliorate current erosion and sedimentation concerns, and provide long-term benefits to the physical integrity of Streams 18, 19, and 20.

Objective 4: Alternative 1 would maintain (short term) and restore (long term) existing water quality within the project area. This alternative is unlikely to have an impact on natural stream temperatures because of untreated reserves around all streams. The untreated portions of Riparian Reserves would maintain functional riparian plant communities that produce adequate stream shade, bank stability, and nutrient input to the stream. Although there would be some microclimate changes in the thinned areas, stream shading would not be reduced. A lack of new stream crossings and the improvements to Road No.16-7-23.1B would greatly reduce potential impacts to project area streams.

Objective 5: Alternative 1 would maintain the sediment regime under which this aquatic ecosystem evolved. Implementing the design features listed in Appendix A for yarding would greatly minimize the potential for sedimentation. The untreated portions of Riparian Reserves around all streams would provide for filtering of any sedimentation potentially created from yarding. The addition of cross drains, stream culverts, and additions of rock on Road No. 16-7-23.1B would reduce the input of fine sediments to Stream 18, 19, and 20.

Log hauling would occur over gravel and paved road systems. Erosion from paved roads is usually minimal due to the protective cover of the surface. Nearly all gravel surfaced roads experience some surface erosion, and can produce a short-term increase in sedimentation to cross drains and stream crossings via ditch lines. The potential risk and level of sedimentation to the stream network within the Long Tom Watershed is expected to be low, because of Fisk Road's topographic position, maintenance level, lack of hydrologic connection, and the new lift of rock. The potential risk of causing an adverse impact to downstream fish habitat or populations is extremely unlikely because of its extended distance to fish bearing habitat and lack of stream connection. The increase in road use is expected to be short and sporadic in duration and not greatly different from long-term existing use.

Objective 6: Alternative 1 could contribute to an increase in summer low flows and overall water yield because evapotranspiration and interception may be reduced due to the removal of some of the trees. The effect would be expected to be minimal because much of the canopy would be retained. Negligible compaction would be expected from the proposed yarding

methods. Effects on the timing and magnitude of peak flows would be expected to be low. The improvements to Road No. 16-7-23.1B would also reduce the possible impacts to peak flows.

The project area ranges from 920 feet to 2100 feet in elevation. The higher elevations (1900-2100 feet elevation) along the divide between the two watersheds are high enough to be possibly affected by rain-on-snow (ROS) events. If a rain-on-snow event occurs in the project area, the residual trees would lessen the impacts. The small amount of the project area at this higher elevation range would also make the possible increase to flows negligible.

Objective 7: This alternative would maintain the timing, variability, and duration of floodplain inundation within and downstream of the project area. There are no wetlands or meadows located within the project area. Much of the vegetative cover would be retained. A moderate amount of riparian vegetation would remain undisturbed, and outer portions of Riparian Reserves would be thinned from below to a lower density than the upland. No new stream crossings would occur under this alternative.

The channel morphology within the project area tends to be moderate to steep, hillslope constrained, in a narrow, confined valley. These channel types typically do not exhibit a floodplain; however, this alternative would not alter existing patterns of floodplain inundation downstream or water table elevation at the project level, because it would have little effect on existing flow patterns and stream channel conditions.

Objective 8: This alternative would maintain the species composition and structural diversity of plant communities in riparian areas to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of course woody debris sufficient to sustain physical complexity and stability.

This alternative would not alter any streamside vegetation that would be expected to influence overall water quality or instream habitats for fish and other aquatic-dependent species. Therefore, the proposed silvicultural prescription is not expected to measurably change the current thermal regime in the riparian areas at the project or watershed levels over the short-term. In the thinned areas of the Riparian Reserve, some drying and warming to the understory may occur in the short term. Over the long-term, as Riparian Reserve stands develop into a late-successional condition, the thermal regime would likely shift toward a historic, cooler regime.

Objective 9: Preserving untreated riparian areas would maintain the existing riparian-dependent plant communities and protect sensitive areas from timber harvest activities. Thinning the outer portions of the Riparian Reserve would restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species by accelerating development of late-successional forest structural characteristics.

<u>Alternative 2</u> - Road Renovation with No Road Const.; Cable and Ground-based Yarding

Impacts on ACS objectives 2-9 would be similar to Alternative 1. The following is a site-specific analysis of the effect of Alternative 2 on ACS objective 1.

Objective 1: Thinning the Riparian Reserves within the project area would likely contribute to the restoration of the diversity, and complexity of watershed and landscape-scale features similar to Alternative 1, except, approximately 300 feet of renovation to an existing road (Road No. 16-7-23.3) would occur within Riparian Reserve under this

alternative. This road renovation is within 200 feet of Stream 19; however, there is no hydrologic connection to the stream. As a result, connectivity would not be affected by renovating this road.
Approximately 3-5 yarding corridors would be constructed to access a small amount of acreage (< 15 acres) to be thinned. Cable yarding of logs would occur across a small portion of nonfish-bearing Streams 2, 4 and 32 (Long Tom watershed). Full suspension of logs would be required over each stream. The untreated buffer width for Stream 2 is 200 feet, and 50 feet for Streams 4 and 32. Trees felled for cable corridors in the untreated buffer would be left on site as course woody debris or instream large wood. Corridors would be approximately 12' wide, and 150' apart at the far end. This action would not have an adverse impact on aquatic habitat features; rather, an immediate pulse of large down wood would result in a small and localized benefit to the riparian area and stream channel.

Alternative 3 - New Road Const. and Road Renovation; Cable and Ground-based Yarding

Impacts on ACS objective 1 would be similar to Alternative 2. Impacts on ACS objectives 2-4, and 7-9 would be similar to Alternatives 1 and 2. The following is a site-specific analysis of the effect of Alternative 3 on ACS objectives 5 and 6.

Objective 5: Alternative 3 would maintain the existing sediment regime. The probability of sediments entering streams from the new spurs and landings would be low due to the distance and location of the new spurs/landings would be from streams (at least 200 feet). Design features, such as outsloping the roads, building to minimum size, blocking and waterbarring, and subsoiling the new roads upon completion of the project, would further reduce the potential for erosion and sedimentation.

Objective 6: Alternative 3 would maintain existing in-stream flows. New roads would not extend the length of drainage networks because of their design features. This would prevent an increase to peak flows.

Alternative 4 - No New Road Const. and No Road Renovation; Helicopter/Cable Yarding

Impacts on ACS objectives 1-9 would be similar to Alternatives 1.

Alternative 5 – Proposed Action; New Road Const. and Road Renovation; Cable Yarding

Impacts on ACS objectives under Alternative 5 would be the same as those described under Alternative 3.

Alternative 6 - No Action

Impacts on ACS objectives 2, 4, 5, and 7-8 would be similar to Alternatives 1 and 2. Alternative 6 includes no treatment of the Riparian Reserves. The following is a site-specific analysis of the effect of Alternative 6 on ACS objectives 1, 3 6 and 9.

Objective 1: Alternative 6 would have no direct impact on the distribution, diversity, or complexity of current watershed landscape-scale features. However, Alternative 6 would not accelerate the development of late-successional forest characteristics of the Riparian Reserve, as Alternatives 1 and 2 would.

Objective 3: Alternative 6 would have no direct impact on the physical integrity of the aquatic system. However, Alternative 6 would not have the added benefit of accelerating the development of larger trees within the Riparian Reserves that would occur under Alternatives 1 and 2. Under this alternative, Road No. 16-7-23.1B would not be renovated; therefore, it would remain as a high risk of failure and sedimentation to Streams 18, 19, and 20.

Objective 6: Alternative 6 would not contribute to an increase in summer low flows and overall water yield. Because no trees would be removed, evapotranspiration and interception would not be reduced. Alternative 6 would not contribute to an increase in flows during a rain-on-snow event in the project area.

Objective 9: Providing untreated Riparian Reserves would maintain sensitive areas and riparian-dependent plant communities, along with invertebrate and vertebrate riparian-dependent species. However, Alternative 6 would not accelerate development of late-successional forest structural characteristics within the Riparian Reserve to support well distributed populations of these riparian dependent species.

ACS Consistency
Based on the above analyses of the effects on attainment of the ACS Objectives, Alternatives 1-6 are consistent with the ACS and the objectives for the Riparian Reserves, and would not prevent or retard attainment of any of the ACS Objectives.

5.5 ISSUE 4 - What are the effects of road renovation and new road construction, on the proliferation of Off Highway Vehicle (OHV) use?

Alternative 1 - No New Road Const. or Road Renovation; Cable Yarding

Alternative 1 proposes that 380 acres would be harvested and would use the existing road system. Harvesting trees, especially on the flat to moderate slopes, would create openings for off highway vehicle drivers to access the area. Approximately 90% or 340 acres within the project area is flat to moderate topography, where the risk of unauthorized OHV use would be increased. In addition, no actions would be taken to limit vehicle use on the twelve existing old roads. It is assumed that the existing dirt roads would eventually be discovered by OHV users and activity would increase on those roads.

This alternative would increase the risk that OHV activity would likely increase on 340 acres in the proposed project area. The extent of off-highway use cannot be accurately predicted at this time. Fewer acres would have increased risk of OHV activity under Alternative 1 than other alternatives, but all of the existing old roads could likely become OHV travel routes over time as OHV users discover them.

Alternative 2 - Road Renovation with No Road Const.; Cable and Ground-based Yarding

Alternative 2 proposes 480 acres to be harvested and includes seven old roads to be renovated during the sale. Approximately 80% or 385 acres of the project area would be flat to moderate terrain, where there would be increased risk of unauthorized OHV use. The renovated roads would be tilled after project completion and would not likely be drivable.

Alternative 2 would increase the risk that OHV activity would occur on 385 acres of flat to moderate topography in the project area. However, the decommissioned roads would not be drivable. The decommissioned roads would likely not be used as access points. Entry into openings created by harvest activities by OHV users would be from the existing gravel roads in

the project area. More acres would be susceptible to OHV use than Alternative 1, but only 5 of the existing old roads would be likely OHV routes.

Alternative 3 - New Road Const. and Road Renovation; Cable and Ground-based Yarding

Alternative 3 proposes 550 acres to be harvested and includes seven old roads to be renovated during the sale as well as nine newly constructed spur roads. Approximately 70% or 385 acres of the topography would be flat to moderate topography within this harvested boundary. The renovated roads and constructed spurs would be tilled after the sale and would not be drivable.

Alternative 3 would increase the risk that OHV activity would occur on 385 acres of flat to moderate topography in the project area. While this alternative would have the largest harvest acreage (550 acres), it also has more steep terrain, which would likely limit the extent of OHV use to the same area as in Alternative 2. In addition, the decommissioned roads would not be passable and would not likely be used as access points. Entry into openings created by harvest activities would most likely be from the existing gravel roads in the project area and the remaining five existing old roads.

Alternative 4 - No New Road Const. and No Road Renovation; Helicopter/Cable Yarding

Alternative 4 also proposes 550 acres to be harvested but does not include renovating, constructing, or decommissioning roads. Approximately 70% or 385 acres would be flat to moderate topography within this harvested boundary.

Alternative 4 would increase the risk that OHV activity would occur on 385 acres of flat to moderate topography in the project area, the same as Alternative 2. Like Alternative 3, this alternative has 550 acres proposed for harvest and more steep terrain. The steep terrain would likely limit the extent of OHV use to the same area as in Alternative 2. In addition, no actions would be taken to limit vehicle use of the twelve existing old roads. It is likely that all of the old roads could become OHV travel routes.

Alternative 5 – Proposed Action; New Road Const. and Road Renovation; Cable Yarding

Alternative 5 proposes 550 acres to be harvested and includes seven old roads to be renovated during the sale as well as nine newly constructed spur roads. Approximately 70% or 385 acres of the topography would be flat to moderate topography within this harvested boundary. The renovated roads and constructed spurs would be tilled after the sale and would not likely be drivable.

Alternative 5 would increase the risk that OHV activity would occur on 385 acres of flat to moderate topography in the project area, the same as in Alternative 2. In addition, the decommissioned roads would not be passable and would not likely be used as access points. Entry into openings created by harvest activities would most likely be from the existing gravel roads in the project area and the remaining five existing old roads.

Alternative 6 - No Action

The No Action Alternative would leave the area as it is. Approximately 63 percent of the section (405 acres) lies within flat to moderate terrain. No harvesting would occur, leaving vegetation and trees as a “buffer” between current and old road systems. This would help deter any OHV use, although it would not prevent it. OHV activity would probably not occur in this area unless

current illegal OHV use is blocked in adjoining sections, forcing users to look elsewhere for their activity.

Cumulative Effects - All Alternatives

There is an increasing trend of OHV use on BLM lands within the Lake Creek and Long Tom Watersheds. Both the Long Tom and Lake Creek Watersheds are highly roaded, (primarily from past timber management activities), providing many access points or opportunities for OHV users. Potential actions taken in Section 25 to limit unauthorized OHV activities as part of the Get Ready thinning could displace OHV users from there and increase the risk that displaced OHV users would "discover" the adjacent Rock Fish area.

BLM's road management program plans to decommission a total of approximately 50 miles (46%) of the 110 miles of BLM controlled road in the Long Tom Watershed road system (EA- 01-09). To date, BLM has completed approximately 16 miles of this. Most secondary road closures and decommissioning in the Lake Creek Watershed on BLM lands have occurred in conjunction with timber sales and other projects to address various resource concerns. The decommissioning of these roads would reduce potential access points within the watersheds for initiating OHV use.

Table 5. OHV Activity

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
Acres available for harvesting	380 acres	480 acres	550 acres	550 acres	550 acres	none
No. of abandoned old roads in unit	12 roads	12 roads	12 roads	12 roads	12 roads	12 roads
No. of Roads Renovated	none	7 roads (2.3 miles)	7 roads (2.3 miles)	none	7 roads (2.3 miles)	none
New Roads (spurs) constructed	none	none	9 new spurs (1 mile)	none	9 new spurs (1 mile)	none
% of flat to moderate topography within the harvest boundary	Approx 90% of harvest area (340 acres)	Approx 80% of harvest area (385 acres)	Approx 70% of harvest area (385 acres)	Approx 70% of harvest area (385 acres)	Approx 70% of harvest area (385 acres)	Approx 63% of entire project area (405 acres)
Evaluation OHV activity to occur after harvesting	Increased risk of OHV use on 340 acres and all (12) old roads	Increased risk of OHV use on 385 acres and 5 old roads	Increased risk of OHV use on 385 acres and 5 old roads	Increased risk of OHV use on 385 acres and all (12) old roads	Increased risk of OHV use on 385 acres and 5 old roads	May eventually occur on 12 old roads

5.6 ISSUE 5 - What are the effects of timber harvest and associated activities on the spread of scotch broom and knapweed?

<u>Alternative 1</u> - No New Road Const. or Road Renovation; Cable Yarding

Scotch broom and knapweed could be introduced into the area because of open stand conditions and ground disturbance associated with yarding. Under this alternative, there could be up to 7.6 acres of ground disturbance that could result in favorable conditions for these

species to enter the stand. The risk of Scotch broom and knapweed entering the stand beyond yarding corridors is limited. Design features, such as one-end suspension yarding and cleaning equipment prior to entry onto public land (see Appendix A), would minimize soil and vegetation disturbance, and minimize the likelihood of introduction and spread of Scotch broom and knapweed.

Scotch broom and knapweed are often introduced or transported by vehicles, and would have the greatest potential for introduction and spread along the 12 existing old roads if OHV users expand onto these routes. There would be an increased risk that OHV use would occur on the 340 acres of flat to moderate terrain with this alternative, thereby increasing the risk that noxious weeds could be introduced into the stand.

Once non-native species have established a presence within the stand, the potential for further spread of non-natives and displacement of native species would persist in openings and highly disturbed areas. Long term, site conditions in the stand would not favor Scotch broom and knapweed once the stand responds to the thinning with increasing understory vegetation and later canopy closure.

Alternative 2 - Road Renovation with No Road Const.; Cable and Ground-based Yarding

Understory vegetation disturbance and top-soil displacement would be greater than Alternative 1, due to a larger treatment area, ground-based yarding, and additional road renovation. Up to 10 acres of ground disturbance could result from yarding, and 100 more acres would be treated. Road renovation and skid-trails would introduce heavy machinery, creating the soil disturbance which invites quick-colonizing weeds. These activities could contribute to a greater potential for the introduction and spread of Scotch broom and knapweed. However, design features, such as one-end suspension yarding and cleaning equipment prior to entry onto public land (see Appendix A), would minimize soil and vegetation disturbance, and minimize the likelihood of introduction and spread of Scotch broom and knapweed. In addition, approximately 1.7 miles of the 2.3 miles of road renovation would be tilled after project completion and the remaining 0.6 miles would be blocked to vehicle access. Tilling and blocking would eliminate the roadbeds as vectors for noxious weeds and reduce their long term potential to contribute to non-native colonization.

OHV use on the remaining 5 old roads would likely provide vectors for the inoculation of the thinned stand with Scotch broom and knapweed via vehicle transport. There would be an increased risk that OHV use would likely occur on the 385 acres of flat to moderate terrain with this alternative, which could increase the risk of noxious weeds entering the stand.

Alternative 3 - New Road Const. and Road Renovation; Cable and Ground-based Yarding

The effects of Alternative 3 would be similar to Alternative 2, except Alternative 3 would have a higher risk of potential inoculation of the forest stand with noxious weeds due to more vegetation disturbance and soil displacement from a mile of road construction, and larger treated area. Up to 11 acres of ground disturbance could result from yarding. However, design features, such as one-end suspension yarding and cleaning equipment prior to entry onto public land (see Appendix A), would minimize soil and vegetation disturbance, and minimize the likelihood of introduction and spread of Scotch broom and knapweed.

Approximately 1.7 miles of the 2.3 miles of road renovation would be tilled and the remaining 0.6 miles would be blocked to vehicle access after project completion. The mile of road

construction would be tilled. Tilling and blocking would eliminate the roadbeds as vectors for noxious weeds and reduce their long term potential to contribute to non-native colonization.

OHV use could possibly continue to provide vectors for the inoculation of the project area with Scotch broom and knapweed via vehicle transport, similar to Alternative 2. There would be an increased risk that OHV use would likely occur on the 385 acres of flat to moderate terrain with this alternative, which could increase the risk of noxious weeds entering the stand.

Alternative 4 - No New Road Const. and No Road Renovation; Helicopter/Cable Yarding

The vegetation and ground disturbance effects of thinning with cable yarding in Alternative 4 would be similar to Alternative 1 (both Alternatives 1 and 4 would have approximately the same area, 380 acres, of cable yarding from the existing rocked roads). Alternative 4 would also have an additional 170 acres of thinning that would be helicopter yarded; however, the ground disturbance (soil compaction and soil displacement) associated with the helicopter yarding would be negligible due to the full suspension of logs, creating less disturbance to invite invasive non-natives.

Although the entire treatment area in Alternative 4 is comparable in size to Alternative 3, it would achieve the thinning without road renovation or road construction, eliminating much of the ground disturbance, compaction, topsoil displacement, and risk of invasive species associated with these actions. The risk of invasive species being introduced to the newly opened stand via road construction and renovation would be eliminated with this alternative, which is similar to Alternative 1. OHV use on the 12 existing old roads could provide vectors for the inoculation of the project area with Scotch broom and knapweed via vehicle transport similar to Alternative 1. OHV use on 385 acres of flat to moderate terrain would increase the risk that noxious weeds could be introduced into the stand.

Alternative 5 – Proposed Action; New Road Const. and Road Renovation; Cable Yarding

With this alternative, vegetation and ground disturbance would be less than Alternative 3, due to the use of cable yarding only. The risk of Scotch broom and knapweed entering the stand beyond yarding corridors is limited. Design features, such as one-end suspension yarding and cleaning equipment prior to entry onto public land (see Appendix A), would minimize soil and vegetation disturbance, and minimize the likelihood of introduction and spread of Scotch broom and knapweed.

Approximately 1.7 miles of the 2.3 miles of road renovation would be tilled and the remaining 0.6 miles would be blocked to vehicle access after project completion. The mile of road construction would be tilled. Tilling and blocking would eliminate the roadbeds as vectors for noxious weeds and reduce their long term potential to contribute to non-native colonization.

OHV use on the remaining 5 old roads would likely provide vectors for the inoculation of the thinned stand with Scotch broom and knapweed via vehicle transport. There would be an increased risk that OHV use would likely occur on the 385 acres of flat to moderate terrain with this alternative.

Alternative 6 - No Action

The No Action Alternative would carry none of the risks described above for the spread of noxious weeds. This alternative would discourage OHV use, although it may not prevent it. OHV use on the 12 existing old roads could provide vectors for the inoculation of invasive non-natives to the project area with Scotch broom and knapweed via vehicle transport. The stand

would remain in a more closed, dense condition, limiting the vulnerability of the proposed project area to the spread of any weed seed brought in by OHV's.

Cumulative Effects - All Alternatives

Within the Lake Creek and Long Tom watersheds, there are locations where displacement of native species by invasive non-natives, particularly Scotch broom and knapweed, has occurred. Roads act as the primary vector for the long distance spread of invasive non-natives across landscapes. Long term, the potential for these species to spread to other areas of the watershed is very likely, particularly in highly roaded areas with high public and vehicle use. Potential actions taken in Section 25 to limit unauthorized OHV activities as part of the Get Ready thinning could displace OHV users from there and increase the risk that displaced OHV users would "discover" the adjacent Rock Fish area and contribute to the spread of Scotch broom and knapweed.

The Bureau of Land Management has an active invasive non-native control program, and is currently targeting roadside populations of Scotch broom and knapweed in these watersheds and across the district.

Both the Long Tom and Lake Creek Watersheds are highly roaded, but there would be no net gain in permanent roads under any of the alternatives.

6.0 CONSULTATION AND COORDINATION

6.1 LIST OF PREPARERS

The Proposed Action and alternatives were developed and analyzed by the following interdisciplinary team of BLM specialists.

NAME	TITLE	DISCIPLINE
Karin Baitis	Soil Scientist	Soils
Mark Stephen	Forest Ecologist	Ecology
Jeff Apel	Engineer	Roads/Transportation
Dave Reed	Fuels Specialist	Fuels/Air Quality
Michael Southard	Archaeologist	Cultural Resources
Phil Redlinger	Silviculturist/Timber Planner	Silviculture
Dan Crannell	T & E and Wildlife Biologist	Wildlife Habitat
Chuck Vostal	Fisheries Biologist	Fisheries
Molly Widmer	Botanist	Botanical Resources
Saundra Miles	Recreation Planner	Visual Resources and Recreation
Rick Colvin	Landscape Planner	Planning and Environmental Coordination
Graham Armstrong	Forest Hydrologist	Hydrology

6.2 CONSULTATION

National Oceanic and Atmospheric Administration (NOAA Fisheries)

ESA Affects Determination/Rationale - The Proposed Action and Alternatives contain design features that would maintain ecosystem health at the watershed and landscape scales to protect downstream habitat for coho salmon and other aquatic-dependent species. These design features include: 1) no timber harvest activity within 200 feet of fish-bearing streams, and within 50-200 feet of nonfish-bearing streams; 2) all new road construction, landings, and skid trails located outside of Riparian Reserves and not hydrologically connected to any streams; 3) all renovated roads outside of Riparian Reserves except Road No.16-7-23.3, which has no hydrologic connection to any streams; 4) no cable yarding across any stream in the Fish Creek drainage; 5) no ground based yarding in Riparian Reserves; 6) log haul operations on road systems outside and far from critical habitat for coho salmon; and 7) all new road construction and reconstruction, and their use, restricted to dry periods of the year. Based on the analysis for the Rock Fish Timber Sale project, this action is determined to be ANo Effect@ for Oregon Coast coho salmon and designated critical habitat.

Essential Fish Habitat - The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) requires Federal agencies to consult with the Secretary of Commerce regarding any action or proposed action authorized, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat (EFH) under the Act. The Proposed Action and Alternatives, as described and analyzed in the Rock Fish Timber Sale Environmental Assessment would have ANo Effect@ on waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.

U.S. Fish and Wildlife Service (USFWS)

ESA Consultation - The Proposed Action was addressed in the FY 2003-04 programmatic Biological Assessment for Habitat Modification Projects. A response from the U.S. Fish and Wildlife Service in the form of a Biological Opinion was issued on September, 30, 2002.

Because of modification of dispersal habitat for the northern spotted owl (with adequate remaining dispersal habitat post harvest), this action would “Affect, but is Not Likely to Adversely Affect” the northern spotted owl. Spotted owl surveys are conducted in this area annually and no owls would be expected to be disturbed by this proposed endeavor.

Because of potential disturbance to nesting murrelets in unsurveyed habitat northeast of the action area, and the possibility of audio disturbance from harvest activities, this action “May Affect and is Likely to Adversely Affect” the marbled murrelet. Design features to minimize disturbance to murrelets have been incorporated into the proposed project design (see Appendix A).

There would be “No Effect” to bald eagles.

Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians

The Bureau of Land Management Siuslaw Resource Area consulted with the Confederated Tribes of Siletz, and the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians. No response was received.

6.3 PUBLIC PARTICIPATION

A public notice advertising the availability of this EA and preliminary FONSI will be published in the Eugene Register-Guard on October 29, 2003. Additionally, the EA will be sent to eight groups or businesses, six state or local government agencies, and 11 individuals. A 30-day public comment period for the EA closes on November 28, 2003.

7.0 REFERENCES

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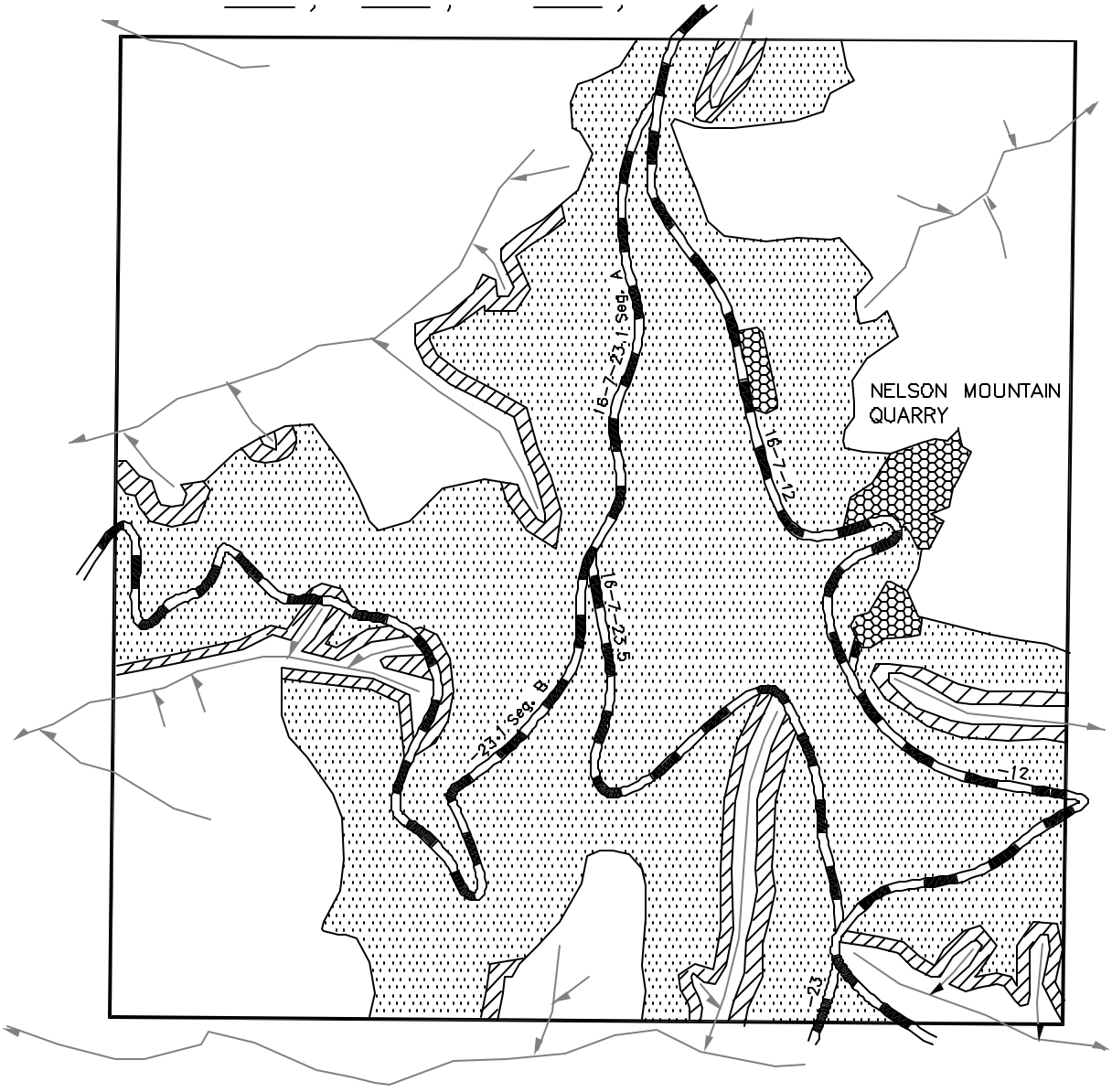
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

ROCKFISH THINNING EA MAP
ALTERNATIVE 1

T. 16S. , R. 7W , SEC. 23 , WILL. MER., EUGENE DISTRICT



0 1000' 2000'

SCALE: 1" = 1,000 FT.

LEGEND

- CABLE YARDING AREA IN UPLAND
- CABLE YARDING AREA IN RIPARIAN RESERVE
- RESERVE AREA
- GRAVEL PIT/STOCKPILE
- EXISTING GRAVEL ROAD
- STREAMS

UNITED STATES
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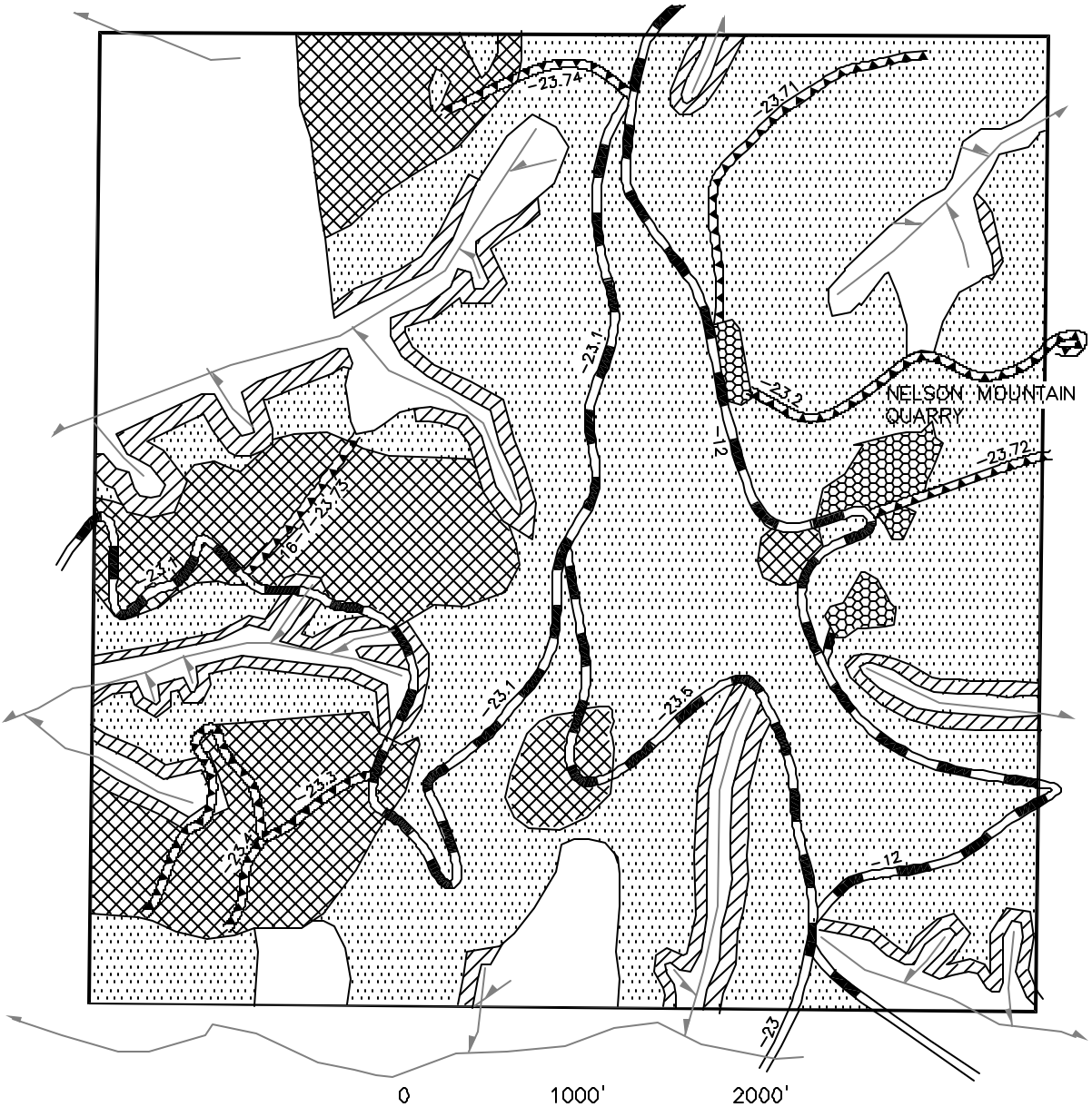
BUREAU OF LAND MANAGEMENT

ROCKFISH THINNING EA MAP
ALTERNATIVE 2

T. 16S. , R. 7W , SEC. 23 , WILL. MER., EUGENE DISTRICT



SCALE: 1" = 1,000 FT.

LEGEND

- CABLE YARDING AREA IN UPLAND
- CABLE YARDING AREA IN RIPARIAN RESERVE
- GROUND BASED YARDING (35% OR LESS SLOPE) AREA IN UPLAND
- GRAVEL PIT/STOCKPILE
- RESERVE AREA
- EXISTING GRAVEL ROAD
- ROAD PROPOSED FOR RENOVATION
- STREAMS

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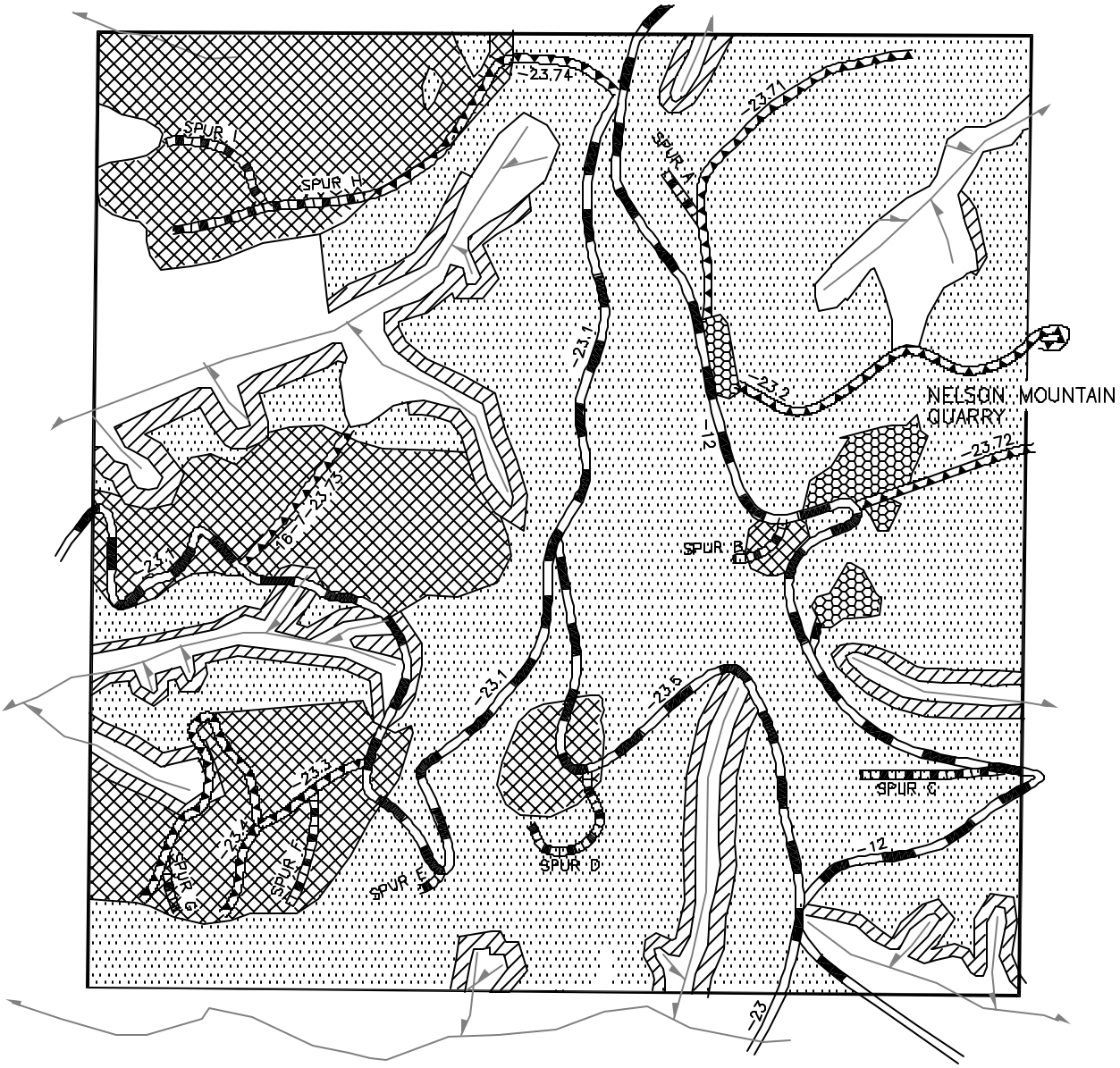
ROCKFISH THINNING EA MAP
ALTERNATIVE 3

T. 16S. , R. 7W , SEC. 23 , WILL. MER., EUGENE DISTRICT



SCALE: 1" = 1,000 FT.

LEGEND

- CABLE YARDING AREA IN UPLAND
- CABLE YARDING AREA IN RIPARIAN RESERVE
- GROUND BASED YARDING (35% OR LESS SLOPE) AREA IN UPLAND
- GRAVEL PIT/STOCKPILE
- RESERVE AREA
- EXISTING GRAVEL ROAD
- ROAD PROPOSED FOR RENOVATION
- STREAMS

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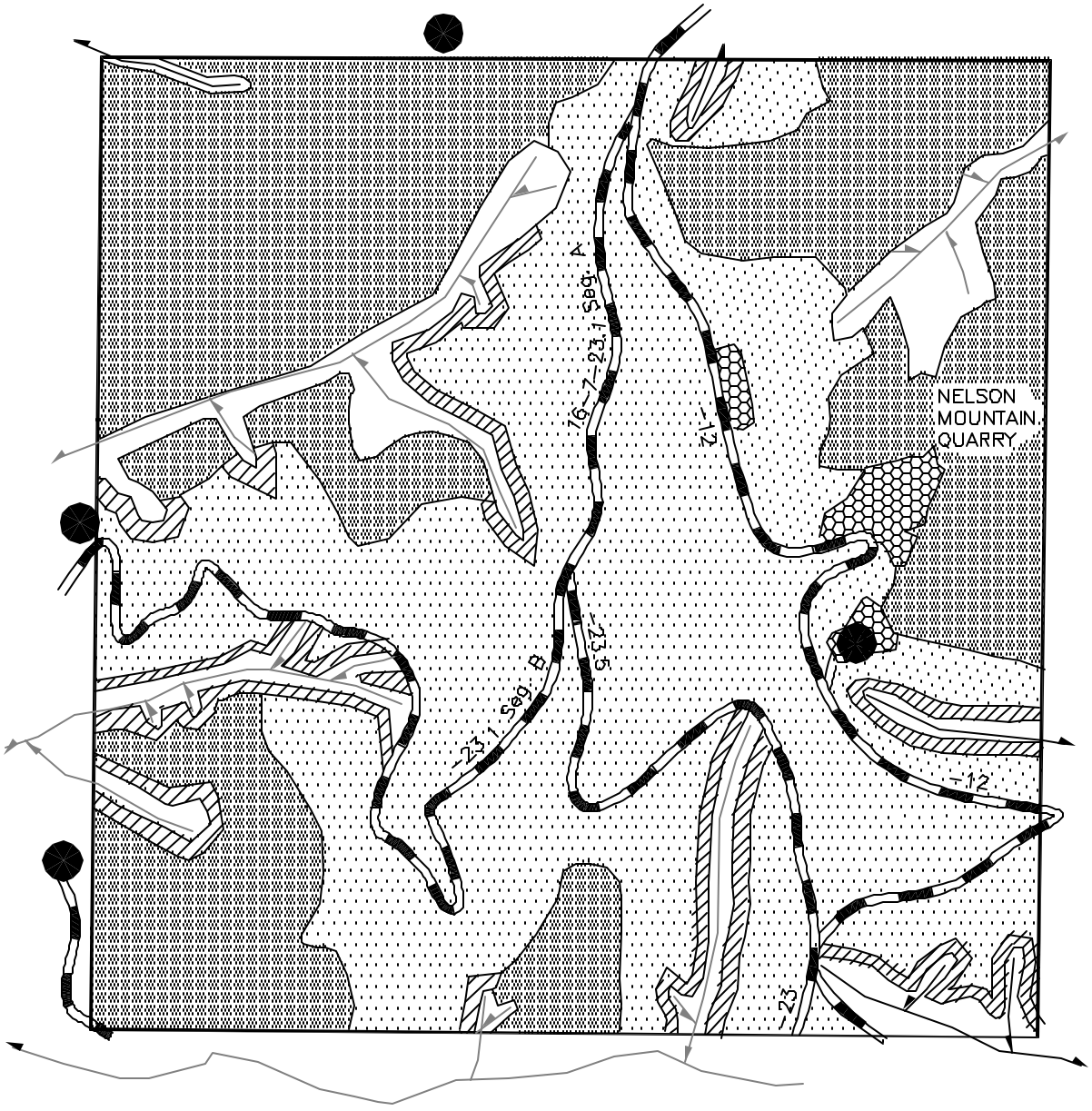
ROCKFISH THINNING EA MAP
ALTERNATIVE 4

T. 16S. , R. 7W , SEC. 23 , WILL. MER., EUGENE DISTRICT



0 1000' 2000'

SCALE: 1" = 1,000 FT.

N

LEGEND

- CABLE YARDING AREA IN UPLAND
- CABLE YARDING AREA IN RIPARIAN RESERVE
- GRAVEL PIT/STOCKPILE
- HELISPOTS/LANDING AREAS
- RESERVE AREA
- HELICOPTER YARDING AREA
- EXISTING GRAVEL ROAD
- ROAD PROPOSED FOR RENOVATION
- STREAMS

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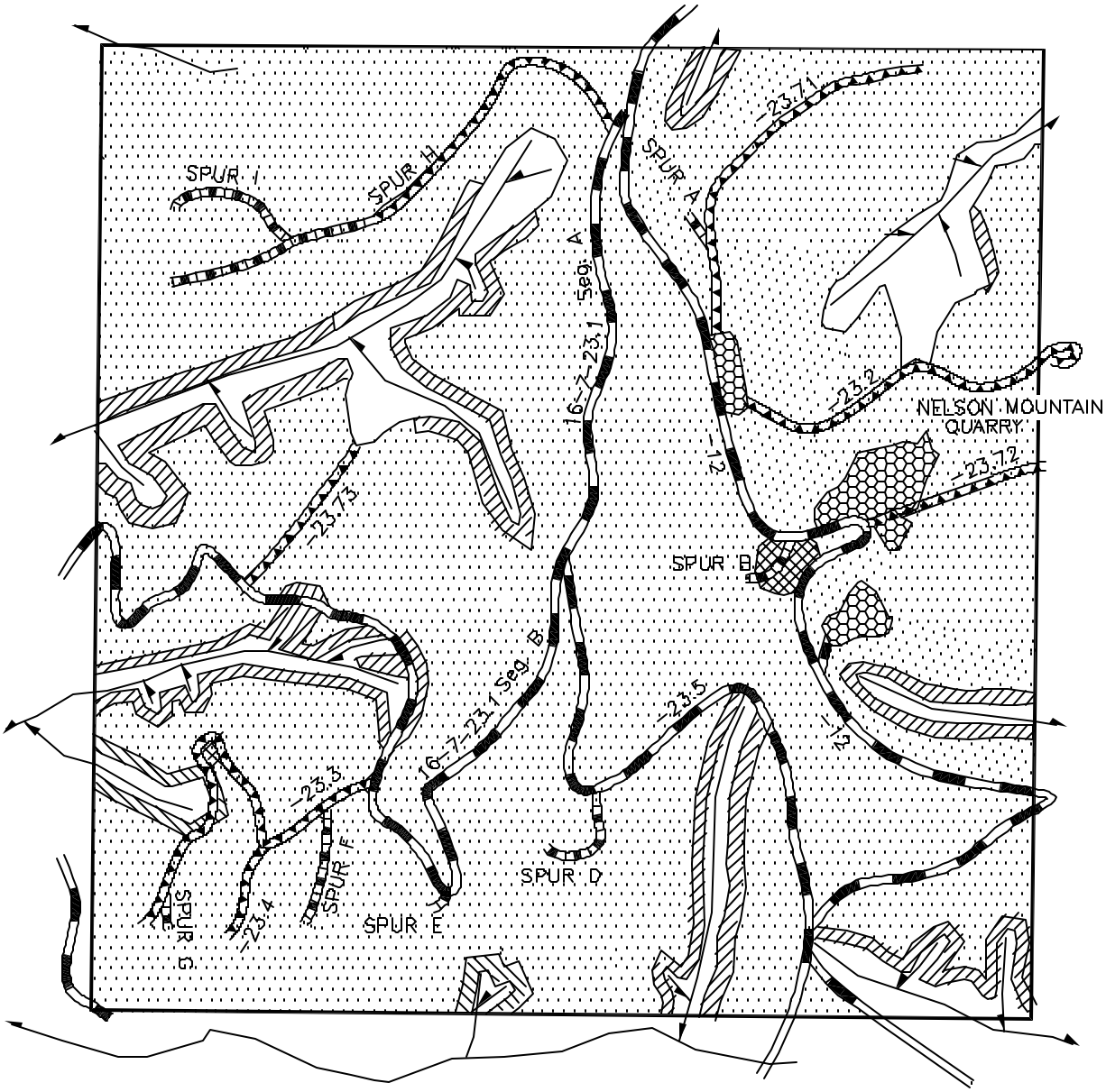
ROCKFISH THINNING EA MAP
ALTERNATIVE 5

T. 16S. , R. 7W , SEC. 23 , WILL. MER., EUGENE DISTRICT



SCALE: 1" = 1,000 FT.

LEGEND

- CABLE YARDING AREA IN UPLAND
- CABLE YARDING AREA IN RIPARIAN RESERVE
- GRAVEL PIT/STOCKPILE
- RESERVE AREA
- ROAD PROPOSED FOR CONSTRUCTION
- EXISTING GRAVEL ROAD
- ROAD PROPOSED FOR RENOVATION
- STREAMS

APPENDIX A

DESIGN FEATURES FOR ACTION ALTERNATIVES

The following general design features would be implemented in conjunction with the proposed action and other action alternatives. Project design features are operating procedures developed by the interdisciplinary team used to avoid or reduce adverse environmental impacts. Project design features are required standards and guidelines included in a timber sale contract.

GENERAL DESIGN FEATURES

1. For the purpose of long term productivity and maintenance of biological diversity, all down material or coarse woody debris of advanced decay (Decay Class 3, 4 or 5) would be retained on site. Recent wind-thrown Class 1 coarse woody debris would be salvaged and removed.

2. To provide habitat for cavity dependent wildlife and to protect the future source of down logs, snags not posing a safety hazard would be reserved. Directional felling and yarding would be utilized to protect residual green trees and snags consistent with State safety practices. Snags felled as danger trees would be retained as CWD.

3. Harvest activities would not occur during sap flow season (April 15- June 15) to limit bark / cambium damage to residual trees, unless a waiver is granted by the Authorized Officer.

4. All "plus" trees (genetically select trees) would be reserved (tree number 1652).

5. All Pacific yew, western red cedar, and hardwoods would be retained to the extent possible to maintain diversity of tree species.

6. Large diameter trees, 28 inches DBH and greater, would be retained, where operationally feasible.

7. Unmerchantable tree tops and limbs would not be yarded to the landing and would be left-on site to contribute to soil productivity.

8. Fish Creek Road (Road Number 16-7-30) would not be used as the haul route due to its proximity to fish-bearing streams.

9. The existing Road Number 16-7-23.1 Segment B would be improved by adding rock, replacing and/or adding relief culverts, and replacing stream crossing culverts to meet current standards.

10. Operations within 0.25 mile of unsurveyed suitable marbled murrelet habitat would not begin until two hours after sunrise and would end two hours before sunset April 1st through September 15th. The following quarry operations would not occur from April 1st through September 15th: drilling, blasting, and rock crushing.

FUEL REDUCTION DESIGN FEATURES

1. Slash within 25 feet of either side of Road No. 16-7-12 and Road No. 16-7-23.1A would be piled using a tracked excavator, and burned (fall or winter) as needed, to create a zone of lower flame lengths and fire intensities should wildfire occur. Piling would total approximately 12 acres and machinery would be restricted to travel on rocked road surfaces.

2. Debris and landing piles not spread in the decommissioning process would be covered and burned as needed, in the late fall when favorable smoke dispersion conditions are most common. All burning would comply with the daily Oregon Smoke Management instructions and limitations.

3. Coarse woody debris would be left in place.

RIPARIAN RESERVES AND STREAM PROTECTION DESIGN FEATURES

1. The height of one site-potential tree has been determined to be 210 feet slope distance in the Lake Creek and Long Tom Watersheds. Variable width untreated stream buffers (minimum of 50 feet each side of the stream) would be provided to maintain existing water quality and to meet ACS objectives for all streams within the project area. The following streams listed below would receive wider stream buffers:

- Streams 8, 14, 29 would receive approximately 100-foot minimum buffers each side of the stream.

- Stream 2 would receive a 210-foot minimum buffer each side of the stream.

- Stream 20 would receive a 210-foot minimum buffer each side of the stream below the confluence with Stream 17 and a 50-foot minimum buffer each side of the stream above the confluence with Stream 17.

- Stream 21 would receive a 210-foot minimum buffer each side of the stream up to the confluence with Stream 29 and a 100-foot minimum buffer each side of the stream above the confluence with Stream 29.

The above minimum buffer widths would be met with all alternatives. Some alternatives would exceed these minimum buffer widths due to variations in the area treated with the alternative.

2. Helicopter yarding (full suspension) or cable yarding (minimum of one end suspension) would be required in Riparian Reserves. Full-suspension of logs would be required when yarding logs across streams. Also refer to the cable yarding and helicopter yarding design features. No ground-based yarding would occur within Riparian Reserves.

3. Conifers that are 6 inches DBH and smaller would be protected wherever possible within the Riparian Reserves to maintain stand diversity.

LOGGING SYSTEM DESIGN FEATURES

Cable Yarding (Upland and Riparian)

1. All cable yarding would be to designated or approved landings. Landings would be located to minimize impacts to reserve trees and soils.

2. Cable corridors would be kept approximately 150 feet apart at the far end to minimize impacts to reserve trees and would be limited to 12 feet in width. A cable system capable of lateral yarding 75 feet would be used.

3. Minimum one-end suspension would be required when cable yarding. Intermediate supports may be necessary to achieve suspension.

4. Skyline cable corridors may be required through Riparian Reserves and stream buffers in order to gain additional lift or deflection of the skyline, and to attain suspension of logs during yarding. Except where specified below in design feature 5, yarding logs across streams and through the untreated stream buffers would not occur. Trees in skyline cable corridors within the untreated stream buffers may be felled, left parallel to the stream to the extent possible, and retained on-site to provide down wood. Any exposed soil in yarding corridors located within untreated stream buffers where there is the potential for adding sediment to streams would be covered with tops and branches.

5. Directional felling and yarding away from streams would be required, where feasible, to provide for streambank stability and water quality protection. Full suspension of logs would be required over stream channels and banks when yarding logs across Streams 2, 4, 28, and 32 (see cable yarding design feature 4 above). Intermediate supports or lift trees may be needed. Any skyline cable corridors across these streams would be within 45 degrees of perpendicular to the stream channel.

6. Cable yarding corridors would be hand waterbarred immediately after use, if necessary to prevent erosion.

Ground-based Yarding

1. Ground-based yarding operations would only occur in designated ground-based yarding areas. No ground-based yarding would occur within Riparian Reserves.

2. All ground-based yarding would be limited to slopes less than 35% and pre-approved by the Authorized Officer. All ground-based yarding would be to designated or approved landings.

3. Ground-based yarding operations would only occur when soil moisture content provides the most resistance to compaction (generally during the dry season), as approved by the Authorized Officer.

4. All primary (more than a single pass) skid trails would be pre-designated and approved by the Authorized Officer. Existing skid trails would be used wherever possible. Trees would be felled to lead to the skid- trail.

5. All skid trails would be limited to 12 feet in width or less. Excavation (gouging) on skid trails would not exceed a maximum of one foot in depth.

Helicopter logging

1. The existing stockpile sites (Numbers 09-46, and 09-47) along Road No. 16-7-12 or landing locations on adjacent private lands (near Road No. 16-7-30 and/or 16-7-14.1) would be used for decking logs and as service landings for the helicopter and other equipment. Helicopter landings would be located at least 200 feet from all watercourses.

2. When helicopter logging, all logs would be suspended free and clear of the ground and tree tops en route to the landing. All multiple-log loads (turns) would be vertically lifted from a small enough radius to result in minimal damage to the residual forest stand as determined by the Authorized Officer.

3. All helicopter landings or service pads (located on BLM and/or private land) are to be approved by the Authorized Officer prior to use.

4. No helicopter logging would occur from March 1st to October 1st to avoid noise disturbance during the critical nesting periods of the northern spotted owl and marbled murrelet.

ROAD AND PRIMARY SKID TRAIL DECOMMISSIONING DESIGN FEATURES

1. Primary (more than one pass) skid trails, renovated roads, new constructed roads, and landings requiring operation during more than one dry season would be placed in an erosion resistant condition and temporarily blocked prior to the onset of wet weather. This would include construction of drainage dips, water bars, lead-off ditches, and earthen or brush barricades.

2. After project completion, compacted primary (more than one pass) skid trails, renovated roads (except Road Nos. 16-7-23.2 and 16-7-23.72), new constructed roads, and landings would be tilled using appropriate "decompaction" equipment and tools, as approved by the Authorized Officer. Primary skid trails and renovated roads would be blocked with earthen or brush barricades prior to the onset of wet weather.

3. After project completion, renovated Road Nos. 16-7-23.2 and 16-7-23.72 would be blocked, and drainage dips, water bars, or lead off ditches would be constructed as needed to direct surface water to the forest floor and leave the road in an erosion resistant condition.

4. After project completion, exposed soil within primary skid trails, renovated roads, new constructed roads, and landings would be covered with root wads, tree tops, branches, or brush, where available, to reduce erosion, improve soil infiltration, and restore hydrologic connection.

BOTANICAL DESIGN FEATURES

1. In order to slow the spread of noxious weeds, all yarding and road construction equipment including excavator would be cleaned prior to arrival on BLM Land.

2. No soil disturbance should occur at *Silene campanulata* variety *glandulosa* (Bellflower catchfly) sites, although canopy opening (thinning) at and near the sites is acceptable. No yarding corridors or roadwork would enter these reserved areas.

APPENDIX B

Table 4. Effects Determination of the Rock Fish Timber Sale Project on the various Aquatic Habitat Indicators and ACS Objectives.

ACS Objectives- Northwest Forest Plan	Relevant Aquatic Habitat Indicators	Effects on the Aquatic Habitat. Maintain/Restore/Degrade					
		Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
2, 4, 8, 9	Temperature	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
4, 5, 6, 8, 9	Sediment & Turbidity	Restore	Restore	Restore	Restore	Restore	Maintain
2, 4, 8, 9	Chemical Concentration & Nutrients	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
2, 6, 9	Physical Barriers	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
3, 5, 8, 9	Substrate	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
3, 6, 8, 9	Large Woody Debris	Maintain *LT Restore	Maintain *LT Restore	Maintain *LT Restore	Maintain *LT Restore	Maintain *LT Restore	Maintain
3, 8, 9	Pool Frequency	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
3, 5, 6, 9	Pool Quality	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
1, 2, 3, 6, 8, 9	Off-channel Habitat	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
1, 2, 9	Cover/Refugia	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
3, 8, 9	Width/Depth Ratio	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
3, 8, 9	Streambank Condition	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
1, 2, 3, 6, 7, 8, 9	Floodplain Connectivity	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
5, 6, 7	Change in peak Flow	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
1, 3, 5	Road Density and Location	Restore	Restore	Restore	Restore	Restore	Maintain
1, 2, 3, 4, 5, 8, 9	Riparian Reserves	Maintain *LT Restore	Maintain *LT Restore	Maintain *LT Restore	Maintain *LT Restore	Maintain *LT Restore	Maintain

*** LT = Long-term restore. A decade or longer.**

ENVIRONMENTAL ASSESSMENT NO. OR090-03-14

Rock Fish
Timber Sale Tract No. E-04-506

October 2003

United States
Department of the Interior
Bureau of Land Management
Eugene District Office
Siuslaw Resource Area

UNITED STATES DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT
EUGENE DISTRICT OFFICE

Finding of No Significant Impact
for
Rock Fish Timber Sale

Determination:

On the basis of the information contained in the EA (OR090-EA-03-14), and all other information available to me, it is my determination that: (1) the implementation of the Proposed Action or alternatives will not have significant environmental impacts beyond those already addressed in the "Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl," (April 1994) and the "Eugene District Record of Decision and Resource Management Plan," (June 1995); (2) the Proposed Action and alternatives are in conformance with the Eugene District Record of Decision and Resource Management Plan; and (3) the Proposed Action and alternatives do not constitute a major federal action having a significant effect on the human environment. Therefore, an environmental impact statement or a supplement to the existing environmental impact statement is not necessary and will not be prepared.

Steven Calish, Field Manager
Siuslaw Resource Area

Date: